Pests

AND THEIR CONTROL

1945

AUGUST

VOL. 13 NO. 8

ORGAN OF THE PEST CONTROL INDUSTRY

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EDITORIAL

Lieutenant Akers Honored By War Department

FOR SERVICES which have undoubtedly contributed greatly to saving the lives of many of our fliers, First Lieutenant Charles H. (Chuck) Akers, son of Rose Exterminator Company's Cleveland manager, Al Akers, has been awarded the Bronze Star Medal. War Department citation, dated February 26, 1945 and giving details of his outstanding accomplishments, follows:

The Bronze Star Medal is awarded FIRST LIEUTENANT (then Second Lieutenant) CHARLES H. AKERS, 0865869, Air Corps, United States Army, for meritorious achievement in performance of services during the period 4 June 1944 to 15 August 1944. While Assistant Weather Officer of his organization, FIRST LIEUTENANT AKERS' untiring efforts and enthusiasm contributed to the successful compilation and promulgation of two weather books entitled "Weather for Photo Pilots" and "Cloud Observation" the value of which have been repeatedly proven in the use that trained meterologists have made of these books, as a guide in reporting weather conditions over combat areas to the air crews they service. In the initial research, thousands of photographs were examined in order to secure those which most perfectly illustrated the weather phenomena described. Infinite care was necessary to present the descriptive matter in such form as would be comprehensible to any individual, not professionally adapted to understand this matter. These publications have had a definite place in the successful prosecution of this war and the intelligence, initiative and proficiency exhibited by LIEUTENANT AKERS reflect great credit upon himself and the Army Air Forces.

BY COMMAND OF LIEUTENANT GENERAL EAKER.

Our congratulations to Lieutenant Akers for a job well done and to his distinguished Dad, one whose activities on behalf of the Industry are too well known to need recounting.

MCA Announces DDT Definitions

AS OF JULY FIRST the DDT Committee of the Manufacturing Chemists Association announced adoption of the following definitions for this chemical:

1. The contraction, "DDT", was first suggested by officials of the British Ministry of Supply early in 1943. This abbreviation was later adopted by agencies of the American government for that class of chemical compounds known generically as dichlorodiphenyltrichloroethane.

2. DDT currently produced for and procured by the military under government specifications JCQD 1005A (December 29, 1944), JAN-D-56 (June 30, 1944), Bureau of Ships 51-1-12 INT (May 15, 1944), is the product obtained when one molecule of chloral and two molecules of monochlorobenzine react with each other in the presence of concentrated sulphuric acid. This reaction mixture consists essentially of 2:2-bis-(parachlorophenyl) - 1:1:1: - trichloroethane, lesser amounts of other isomers, and by-products of reaction. If the product resulting from any other process is identical, the use of raw materials other than chloro and monochlorobenzene for the production of DDT in no way would affect or change the nature and character of these definitions and terms.

The melting point of this isomer mixture is not sharply defined, and in line with the usual practice in dealing with such products, the above specifications have assigned a "setting point" value of 88°C. minimum and designate the product us "DDT (dichlorodiphenyltrichloroethane) Technical." Therefore, this product is best described as: "DDT (dichlorodiphenyltrichloroethane) - technical (Setting Point 88°C. minimum).

3. Other refined or purified grades may be required for specific purposes. For example, JCQD 1005A (December 29, 1944) provides for a purified DDT possessing a "melting point of 103°C. minimum." This quality grade can best be described as "DDT (dichlorodiphenyltrichloroethane)-purified (Melting Point 103°C. minimum).

4. Future developments may require a more highly purified DDT with respect to a higher content of the parapara isomer, or even require some one specific pure isomer. In such an event, sufficient descriptive designations are already in established use in the fine chemical industry to adequately describe the quality, if specifications therefor promulgate—i.e., "U.S.P.," "C.P.," "Reagent," Eventual designation of such quality products is best described by the generic chemical name, "dichlorodiphenyl-trichloroethane," as the main title, followed by the chemical name for the specific isomer as a subtitle in parenthesis. For example:—"Dichlorodiphenyltrichloroethane-Reagent (2:2-bis-(parachlorophenyl) - 1:1:1: - trichloroethane)."

5. Formulations:—It is recommended that when DDT is shown as an ingredient the statement be worded as follows:—"Active ingredient DDT (dichlorodiphenyltrichloroethane) - Technical . . . xx%." Other ingredients, active or inert, should be shown as required by regulations.

MAX RUKIN

As we were about to go to press, we were shocked to learn of the death of Max Rukin of the Industrial Fumigant Co., Chicago, Ill. Another victim of the war, Max, a director of the NPCA, was an outstanding and conscientious gentleman devoted to his profession as a fumigator. Max undoubtedly tried to carry a load much heavier than he should. The demands made upon him, even in the face of manpower problems, prompted Max to carry the load because he recognized the necessity of protecting foodstuffs and other commodities from insect infestation. He neglected his own well-being, which brought his untimely death—the supreme sacrifice for the war effort. The contributions he made to industry wellfare added immeasurably to respect for it. He will be missed and mourned by his many friends in the Industry. Our sincere condolences to his widow, Mrs. Rukin.

Letters to the Editor

July 17, 1945.

I don't know who sent you the news item about my graduation from the Lawrenceville School [which appeared in July, Pests] but he either was mistaken or the printer's devil played havoc with you. It was not I who graduated, but, rather, my son, Alfred Vogel. Thanks just the same for giving me so much credit!

John G. Vogel.

Please see page 24 of your July issue in which you quote "Oil Paint and Drug Reporter" relative to "Squirrels Eat Lead". I picked up just about the same clipping back in June in the Framingham, Mass. News. I wrote the Denver Laboratory and asked them if they were recommending asphalt-mixed with aloes; that I thought the best material so far discovered was 96a. I had a reply from Jack F. Welch, Biologist of the Denver Laboratory to the effect that I was right and that 96a is the material recommended for use on telephone cables; that the clipping involved was an error; that the telephone company has used the asphalt-aloes mixture and has reported it to be of some value; and that further studies will be probably carried out by the Denver Laboratory along this line.

You can use the above statement for whatever it may be worth.

Yours very truly,

George B. Lay, District Agent,
Fish & Wildlife Service, Boston, Mass.

The National Pest Control Association

By PROF. J. J. DAVIS, Head, Department of Entomology,
Purdue University, Lafayette, Indiana

INSECTS appeared millions of years ago, and insect remains that have been preserved as fossils through the ages give us a fair idea of the early forms of insect life and their possible economic significance. Perhaps the first references in literature to the economic significance of insects are those recorded in the Old Testament of the Bible, where we read of the ravages of such insects as flies, locusts (grasshoppers), cankerworms, and palmer worms. Doubtless insects have been a problem of man since his earliest existence.

Entomology, the science of insect life, is a relatively recent science, and economic, or applied, entomology, as a science, is even more recent. In fact we may say that the science of economic entomology dates back not more than seventy-five years. Prior to 1870 entomologists were chiefly interested in the collection and identification of insects. With the advent of the cotton caterpillar and the Colorado potato beetle in the seventies the economic significance of insects became increasingly important, and with the introduction and establishment of insects into North America from foreign countries the insect problems became doubly important. During these past seventy-five years of progress in economic entomology emphasis has been given to the problems of controlling insects destructive to animals and plants that provide food and clothing and to insects and other arthropods that are responsible for the carrying and spread of diseases of humans and domestic animals and plants.

In years past those interested in entomology have been able to elect it as a vocation in the fields of teaching, research, extension, and regulatory work—largely in federal or state agencies. More recently, manufacturing industries, especially the chemical industries, have demanded increasingly large numbers of entomologically trained men. At the same time some college trained persons and some who developed from apprenticeships foresaw opportunities in the field of insect and rodent control as consultants and as service operators. These service operators, who practiced insect and rat control largely in hotels, warehouses, and homes as much as seventy-five years ago, became known as "exterminators," and even today are so called in many localities. Methods in the early days were crude and tedious, but records indicate successful operations.

A national emergency some twelve years ago served to bring together a nucleus of persons and firms engaged in structural pest control work. To be sure, prior to that time, there had been local organizations of exterminators in several cities, and local city ordinances had been enacted to curb reckless fumigation practices. However, the necessity under NRA requirements for preparing a national industry code must be emphasized as the occasion for the birth of a recognizable pest control service industry. It is to the credit of the comparatively few assembled exterminators, now known as pest control operators, or PCO's, that the possibilities and the needs were recognized for the formation of a permanent organization. Thus, the National Association of Exterminators and Fumigators was formally organized. The change in 1936 to the present name, National Pest Control Association, was more than a mere change of wording; it was evidence of an already broadened outlook. The organizers foresaw the need and demand for pest control service as a profession of great importance to humanity and the necessity for a co-operating industry to meet this need.

Today the National Pest Control Association is a well-organized group of 685 pest control establishments, representing an estimated personnel of 5,800 individuals. Aside from the annual meetings, dealing largely with industry problems, the Association is co-operating in maintaining five regional educational conferences, conducted annually at Purdue University, University of California, Louisiana State University, Massachusetts State College, and the University of Montreal. Thus, through the union of the pest control industry with science the goal of a pest control profession is being achieved.

Through the annual meetings of the N.P.C.A. and the regional conferences the pest control operators have developed standards and ethics accepted by all members of the Association. The code of ethics includes:

1. **Relation of Member to Public:** The member in his advertisements or other solicitations of business

J. J. DAVIS

Professor J. J. Davis is one of the most energetic entomologists in this country. He has the distinction of having served as president of both the American Association of Economic Entomologists and of the Entomological Society of America. Although he carries on the varied duties of chief of entomological teaching and of experiment station research in economic entomology at Purdue, he has found time to serve also as the godfather and guide of the National Pest Control Association, which he described in the February issue. He was the first entomologist to make it possible for practical pest control operators to receive university instruction on the identification of insects and on insect control. He did this by establishing at Purdue a pest control operators' conference, which is held for several days in January of each year. On the future of pest control services Professor Davis writes: "There is an increasing demand for pest control service and consultation. Along with the needs for structural and household pest control service, the public is asking for service in adjacent fields, including the control of pests attacking trees and shrubs, gardens and lawns. And people want relief from insects that annoy them during outdoor concerts, plays and sports. This enlarging field will call more and more for academically trained personnel of professional standing."

should not use tricky, fraudulent, or misleading wording or methods.

2. **Relation of Member to Client:** The member shall thoroughly analyze the requirements of his clients and shall conscientiously recommend the means best suited for the client's needs.

3. **Professional Services:** The member upon accepting a contract or service agreement shall render skilled, intelligent, and conscientious service.

4. **Relation of Member to Competitor:** The member shall not publicly criticize the business or private affairs of a competitor.

5. **Relation of Member to Association:** The member shall be loyal to the principles of his Association and active in its advancement.

Standards carefully prepared and adopted by the Association or well along in preparation are concerned with fumigation, termite control, and control of rodents, ants, and roaches. These standards involve a knowledge of entomology as it relates to identification, life cycles, and habits of pests; a knowledge of the chemistry and toxicology of insecticides; and an understanding of the principles of construction and of sanitation. They likewise involve procedures of treatment, with special reference to safety practices. Experience has taught the pest control operator who follows these official standards that there are no substitutes for accurate analysis, sound technique, and skillful application.

Entomology is now recognized as one of the important sciences. It has a direct and close relation to profitable agriculture and to the health and well-being of all peoples. In North America three major organizations represent this important science:

1. The American Association of Economic Entomologists, organized in 1889 to represent research on insect control.

2. The Entomological Society of America, organized in 1907 to represent the "pure" science of entomology.

3. The National Pest Control Association, organized in 1933 to represent the commercial service phase of applied, or economic, entomology as it is related to structural pest control.

This last organization has recognized its dependence upon the other two for research, and as a result the industry is rapidly improving in its methods, standards, and ethics, through the development and distribution of the knowledge gained from this research, both current and planned.

Thus we find that the pest control operators are rendering valuable public services, which will doubtless gain in importance and significance in post-war days. Their job is to control pests of many kinds: those that menace health, as houseflies, mosquitoes, body lice, and fleas; those that destroy property, as clothes moths, carpet beetles, silverfish, termites, powder post beetles, rats, mice, and rot fungi; and those that are annoying, as ants, roaches, bedbugs, and book lice. Consequently, it is necessary for the PCO to know how to identify these various pests, what to prescribe (based on his knowledge of the life history and habits of each pest), and the best methods of applying the remedy, to the end that the undesirable condition will be eliminated.

—Reprinted from The Scientific Monthly, February, 1945, Vol. LX, Pages 151-152.

*This is the first of a series of articles that are to be published from time to time in THE SCIENTIFIC MONTHLY on semiprofessional and trade associations whose effectiveness is partly dependent on the progress of science.—Ed.

Some Limitations of the New Insecticide DDT

By **W. A. ROSS**
Dominion Entomological Laboratory
Vineland Station, Ont.

Editor's Note: The following paper was read at the Canadian PCO Conference, University of Montreal, February 20, 1945.

SINCE I received a copy of your program I have been asking myself why on earth I allowed Professor Bellemare to inveigle me, an orchard entomologist, into accepting an invitation to speak at the Annual Convention of the PCO Association, and I haven't yet found the answer. It is true I have been intimately associated with the DDT investigations carried on by the Dominion Division of Entomology during the past two years, but practically all our work has been confined to insects attacking fruit, vegetables and ornamentals. Anything I know, or think I know, about DDT and the insects in which you, as pest control operators, are especially interested, is based wholly on what I have read and heard. These then are the limitations of your speaker, who is supposed to discuss some of the limitations of DDT.

The place of DDT as an amazingly effective insecticide for the control of lice, mosquitoes, fleas and flies, which are responsible for the spread of typhus fever, malaria, yellow fever, and other diseases, is very well established. Immense quantities of DDT have been and are being used to delouse millions of people in the liberated countries, primarily in order to prevent serious outbreaks of the murderous army disease—typhus fever. We are told that in Italy DDT proved to be marvellously effective for this purpose, and that if it did nothing more than this, it would still rank as a great and beneficial scientific discovery. In tropical countries it is also being used against mosquitoes to prevent malaria, which, in previous wars in such countries, immobilized large armies. No, there is no question about the tremendous value of DDT in preventive medicine and public health. In this connection it has been stated by an authority in the field of preventive medicine, that DDT is the war's greatest contribution to the future health of the world.

There is no question about its value for the control of several species of insects, which attack or annoy man; for the control of flies in farm and dairy buildings; for the control of several species of household pests. In connection with the last, some entomologists now believe that DDT has made it possible not merely to control, but to eradicate from our homes, or should I say the other fellows' homes, that old and abhorred enemy of the housewife—the bedbug. The value of DDT for the

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purposes I have mentioned is, I should say, either well established or holds great promise, but when it comes to its employment in fighting insects which attack fruit, vegetable and other food crops, it is very apparent that much more exhaustive research work will have to be conducted over a period of years before entomologists will be justified in recommending its use on such crops. We shall first of all have to determine definitely if its general employment on such crops might create a health hazard. In this connection the general impression today is that there is little or no danger of DDT spray residues on fruit or vegetables causing acute or immediate poisoning—probably less danger than in the case of some other poisonous insecticides; but some considerable time will have to elapse before any definite statement can be made about the risk there may or may not be of DDT residues causing chronic poisoning, that is poisoning produced by the ingestion of very small amounts of toxic material over a long period. Exhaustive studies on the toxicity of DDT to man and other mammals are under way in various countries. In Canada extensive acute and chronic feeding tests are being conducted by the Dominion Animal Pathologist, using rats, guinea-pigs, rabbits, pigs, and cattle, as the test animals. From all this work we shall learn in due course the extent to which DDT can be used with safety on food crops.

As to the dangers of DDT poisoning through contact with the skin or by inhalation—the type of exposure most likely to occur in your work—it is pretty generally agreed that dry powders do not offer any hazard when applied to the body. DDT in solution, however, particularly in animal or vegetable oils, is absorbed through the skin of experimental animals in sufficient quantity to produce symptoms of poisoning. Man, however, seems to be more resistant than some of the other animals. The United States Public Health Service has examined a number of men who have been exposed to DDT over long periods. For example, two men were employed daily for three and a half months in treating barracks with DDT, mostly as a 5% spray in kerosene. Their hands and other parts of the body were continually wet with the solution and their working clothes, which they wore for a week without changing, soon became saturated. The spraying was done with a power atomizer and the men were exposed, without respirators, to a mist so dense that it sometimes obscured objects six or eight feet away. Yet, despite this exposure, they remained in good health and when they were very carefully examined five months later no symptoms of DDT poisoning could be found. Examinations of other men who have had prolonged exposure have also failed to show any definite effects from DDT.

It appears, therefore, that neither the operators themselves nor the public are likely to suffer from DDT poisoning if it is used with reasonable care in commercial pest control operations. It is poisonous without question, but much less dangerous than the fluorides, arsenicals and cyanides you now use. In fact, one of the greatest benefits of DDT from your viewpoint is that it will likely replace cyanide fumigation, with all its hazards, for bedbug control.

A second problem which will have to be thoroughly studied before we can recommend DDT, say for orchard spraying, lies in the fact that DDT is a double-edged sword, as it destroys some beneficial as well as many injurious insects. As I have frequently mentioned to fruit growers, Nature is our great ally in the fight against orchard insects. What we do in the way of control is in many instances merely supplementary to what Nature, in the form of predators, parasites and other natural control factors, does for us on a grander scale. Therefore, if DDT has too drastic an effect on predators and parasites, it might conceivably do in the long run almost as much harm as good by upsetting the natural balance of insect pests and natural control factors. For example, we noted this past year that where DDT was used on apples for the control of codling moth, infestations of European red mite developed, due unquestionably to the drastic effect the insecticide had on the predators of the red mite.

What would happen in our peach orchards if we were to spray them regularly with DDT? I don't know, but I wonder, because while DDT is effective against the oriental fruit moth, the most important parasite of the moth is also susceptible to the insecticide, therefore it is conceivable that by spraying peach orchards with DDT, say for fruit moth control, we might, by nullifying to a greater or less extent the work of the parasite, let ourselves in for still more and more spraying for fruit moth control; and the DDT might also, by nullifying to a great extent the European red mite predators, greatly increase the importance of this mite as a pest of peach trees.

Because of the uncertainty about the toxicity of DDT to man, and because of the uncertainty of its effects on beneficial insects, I am very glad that DDT is not, and most probably will not, be available for agricultural purposes until after the war. This may give us more time to learn more about the insecticide's limitations and to learn how it can be most wisely used, if used at all, in crop spray programs. You pest control operators are in a more fortunate position than agriculturists because you need not worry about DDT residues on food crops or its effect on other insects, and because of this I can see no reason why you should not be able to use DDT, at least in a limited way, as soon as the demands of the armies and the organizations responsible for disease suppression in liberated countries, fall below the manufacturers' output.

When we first started our DDT studies we happened to work with species of insects which proved to be extremley susceptible to the insecticide, and the extraordinary results we obtained—100% kills and practically 100% plant protection—from concentrations as low as ½ oz. in 100 gals. rather alarmed us. For a time it looked as if DDT were going to do us and other entomologists out of a job—deprive us of our bread and butter,—but later on we were able to sleep o'nights when we learned that DDT, like everything else in this imperfect world, has its limitations. Some species of pests are quite resistant to it, such as mites e.g. European red mite, and red spider; certain caterpillars—strawberry leaf roller, eye-spotted budmoth; fruit flies, such as the apple maggot; Mexican bean beetle; some species of ticks, etc.

We also learned that still other species are only moderately susceptible to it. For example, the usual concentration of DDT employed in orchard experimental work is less effective against plum curculio than the standard treatment of lead arsenate. The German cockroach is at best only moderately susceptible to DDT—at least the residual action of the insecticide against this species is not prolonged. The lawn ant probably also falls in this class. Anyway in our work with this species three applications at 4 to 8 day intervals of a 3% dust failed to give complete control.

There is, however, a very wide range of insects against which DDT is very effective: e.g. msoquitoes (larvae and adults), human lice, houseflies, bedbugs,

FUMIGATION NEWS

AUGUST 1945

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AERO BRAND HCN DISCOIDS AND CYANOGAS
by Insecticide Department of
American Cyanamid & Chemical Corporation
Kansas City 6, Mo. 30 Rockefeller Plaza, New York 20, N. Y. Azusa, Calif.

Leading Middle Western Pest Control Organization Says: "There is no job too large or too small for the use of HCN Discoids"

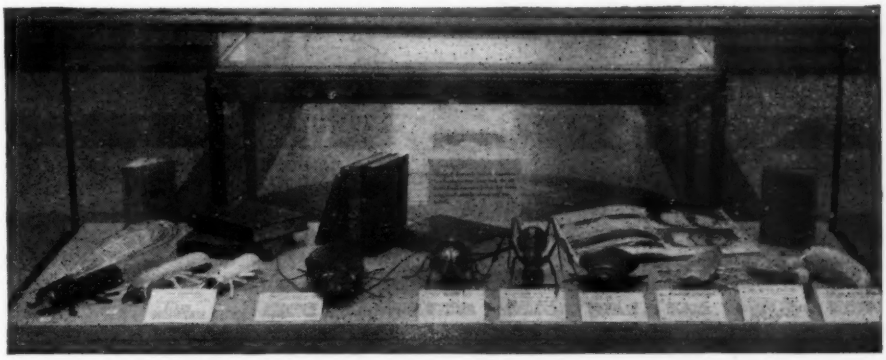
TOLEDO, OHIO.—The Federal Fumigating & Exterminating Co., one of the leading pest control organizations in this part of the country, whose main business is fumigation, uses HCN Discoids successfully for every size job from private homes to large commercial buildings.

Since the company was organized in 1936, it has fumigated some 1500 homes, institutions, and commercial buildings. According to company officials, "*There is no job too large or too small for the use of HCN Discoids. We find discoids particularly satisfactory for three reasons: (1) labor saving, (2) cleanliness, and (3) security of property against damage.*

A great deal of public interest was created in one of Federal's fumigation jobs in which HCN Discoids were used. When the Public Library of Toledo moved into its new building, a complete fumigation was made of book collections in the old building to destroy insect pests before the books were moved. After the new building was opened, the library requested displays showing fumigation equipment and materials and destructive insect pests. These were put on exhibit in the main aisle for thirty days.

The Federal Fumigating & Exterminating Co. is bonded and licensed by the City of Toledo and is a member of the National Pest Control Association.

Fumigation of a private home with HCN Discoids to destroy carpet beetles and clothes moths.



Another display in the library included enlarged models of destructive insects, (from left to right) the queen, soldier and worker termite, the cockroach, house fly, ant, bedbug, silverfish or firebrat, the clothes moth and its larva. Fumigation to exterminate these pests was done before books were moved into new building.

Display in the Public Library of Toledo showing fumigation equipment and materials used in the destruction of insects in the old library building before book collections were moved into the new building.

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It is suggested that the PCO form the habit of marking the date on his gas mask canister when it is first placed in service. This practice will afford some idea as to the amount of service obtained from the canister and will also serve as a guide as to approximately when the canister should be replaced.

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fleas, American cockroach and cattle lice. Agricultural pests: leaf hoppers e.g. grape, white apple and potato; chafers, such as the rose chafer, and the Japanese beetle; other species of beetles, such as the strawberry leaf beetle, the spotted and striped cucumber beetles, the common and spotted asparagus beetles; codling moth and oriental fruit moth; plant bugs, such as the strawberry mirid and the tarnished plant bug; three species of cabbage worms (diamondback moth, imported cabbage worm and cabbage looper); greenhouse leaf tier.

To return to and to sum up some of the limitations of the insecticide, the chief ones are: (1) it is not effective against all insect pests (the one limitation common to all fields of pest control); (2) for agricultural purposes its use, for quite some time, will be circumscribed and conditioned by the uncertainty regarding its toxicity to man and animals; (3) in forest and orchard control work its use will or may be restricted by the detrimental effect it has on some beneficial insects, and in forest spraying by its toxicity to aquatic life (fish, insects, crayfish, tadpoles, etc.). Its employment may also be limited in agricultural work by the injurious effect it may have on some plants (squash, corn, tomatoes), and by the extent to which it is compatible with fungicides and other insecticides.

SOAP IN INSECTICIDES

By GEORGIA LEFFINGWELL, *Ph.D., and*
MILTON A. LESSER, *B.Sc.*

AS an emulsifier and "wetting" agent, soap has long found extensive use in insecticides.

Soaps of fatty acids are the agents generally used, and such insecticides are often sold in the concentrated form, with water added immediately before use. The soaps favored for this use are those that have a high miscibility with insect-toxic oils. Potash soaps are generally more miscible than soda soaps, but the fatty acid portion of the soap molecule also has an effect; oleates are preferable to stearates, which in turn are preferable to palmitates. Sodium oleate, for example, is sufficiently miscible with nonaqueous liquids to be useful in making oil emulsion sprays.

While the quality of soap is not as important a consideration in insecticide manufacture as in other fields, the advantages of consistent and reproducible behavior make it well worth while to use a definite grade or type. As remarked by Boyle, (1) an important point often overlooked is that a small quantity of water is a necessary component of a miscible oil. Otherwise the system will not retain the amount of soap needed for subsequent emulsification. Hard water which precipitates soap and renders it useless may be overcome by the use of higher proportions of soap if the mixture is to be diluted with a natural hard water rather than with a soft water. In this case the excess soap serves as a water softener.

Soaps are efficient wetting agents because of their ability to lower surface tension, and their extensive use as "spreaders" in insecticidal sprays is due to this quality. (2)) Soaps are standard as spreaders, for not only do they cause the insecticidal mixture to cover more surface but they also serve to facilitate penetration of any waxy covering on the insects. (3) For this purpose soaps are employed with many chemical poisons, and are frequently used in conjunction with vegetable derived insecticides such as nicotine, pyrethrum and rotenone. The amount of soap will vary not only with the different toxic materials, but also in some cases with the same material in different areas; this last depending to some extent upon the hardness of the spray water. Excessive quantities of spreader must be avoided since this causes run-off, thereby defeating the very purpose for which the spreader is included.

It should not be forgotten, however, that soap as a sole active ingredient, frequently forms an efficient insecticide against a variety of plant pests, especially for small plantings or house pests. A standard, frequently recommended (4, 5, 6) spray may be made by dissolving 2 ounces of soap (mild laundry type or flakes) in 1 gallon of water. Such a spray is useful against aphids (plant lice), leaf-hoppers, thrips, and the younger stages of mealybugs, scale insects, whiteflies and other soft-bodied insects. This spray must not be used full strength on very tender plants such as young cabbage or cauliflower in seedbeds, on garden peas, or on young beans, because it may injure the leaves. A half-strength soap solution will suffice for such plants, but for use on hardy plants the amount of soap may be increased to kill larger insects.

A stock of soft soap may be more convenient for quick or frequent applications, and may be made either from bar soap or soap flakes. However, the weight of actual soap contained should be taken into consideration in using such a mixture. White coconut oil soaps are particularly good as insecticides and are said to work well in hard water areas. (5) To be effective, soap sprays must contact the bodies of insects.

In this connection it has been found that the soapy water remaining in the tub after clothes have been laundered with mild soap may be used for spraying or dipping foliage of infected house plants. Plants treated with concentrated soap solutions should not be placed in the sun for a full 24 hours, and the plants should be sprayed with clear water before being returned to their former locations. (6)

Both the dispersing and wetting properties of soap are called into play in preparing insecticidal emulsions based on oils or kerosene, with or without the addition of other toxic substances such as nicotine sulfate. As pointed out by Larson, (7) most oils are good insecticides but they are also toxic to many plants. This effect can be overcome by emulsifying the oil with water with the assistance of an agent like soap. A common form of emulsion may be made by mixing together:

Lubricating oil	2 gal.
Water	1 gal.
Soap	2 lbs.

This concentrate should be diluted with water to 100 gallons for use. It may be used during the summer on lawns to control sod insects, but on trees and shrubs it should be used in the spring before the foliage appears.

combined operations

...another Santobane mission under way

... Of interest to users of Santobane* (Monsanto's Dichloro-Diphenyl-Trichloroethane, Tech.), and to users of formulations of this famous war-developed insecticide, is this announcement of a joint research development ... in the laboratory and in the field ... by Monsanto Chemical Company and McLaughlin-Gormley-King Co. whereby the latter will be able to offer to its many licensees dependable formulations of Santobane for pest control.

This first announcement of such a combined operation does not mean that consumers can immediately expect Santobane formulations to end insecticide problems in industry, on the farm or in the home. Santobane is still going practically 100% to the military, with only experimental quantities available for other use. Also, there is considerably more to be learned about Santobane's proper formulation as well as its toxicity to humans before its full effectiveness or its limitations can be determined.

But the program as announced here has been set up, excellent results have been achieved, and the millions interested in positive pest control can look forward with confidence to the same excellent results from Santobane's peacetime applications as are being achieved in war. MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 1700 South Second St., St. Louis 4, Missouri. District Offices: New York, Chicago, Boston, Detroit, Charlotte, Birmingham, Los Angeles, San Francisco, Seattle, Montreal, Toronto.

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Of interest in this connection are European studies (8) on the control of the stink bug. Of the large number of sprays and dusts examined, the best results were obtained with 5 per cent petroleum-soft soap solution or crude oil-soft soap solution, which did not cause burning of the leaves. Other chemicals, while effective in controlling the insects, caused injury to foliage.

Commercially prepared miscible or "emulsible" oils contain requisite emulsifying agents and generally need only be diluted with water for ready use. Occasionally, however, soap is added either as a spreader or as an adjunct dispersing agent. The following preparation, containing nicotine sulfate as an added toxic agent, is recommended for use against newly hatched scale insects on hardy shrubs and also against lacebugs:

White oil emulsion (83% oil)	1 cupful
Soap flakes	1½ cupsful
Nicotine sulfate solution	4 teaspoonsful
Water	3¼ gallons

Although now displaced to some extent by white oil emulsions, kerosene emulsion is an effective contact insecticide for general use. According to a publication of the United States Department of Agriculture, (6) a stock emulsion of kerosene is prepared from:

Kerosene	2 gal.
Fish oil or laundry soap	½ lb.
Water	1 gal.

If hard bar soap is used, it should be cut into chips and then dissolved in hot water and, while the solution is still hot, the kerosene is added very slowly, stirring constantly. A mechanical mixer or other means of thorough dispersion will help to form the requisite creamy emulsion.

Diluted to 5 per cent, this emulsion is effective against mealy bugs, rose midge larvae in the soil, immature scales, and red spiders, while a 1 per cent emulsion can be used successfully against aphids, thrips and ants in the soil. Soil overrun with ants may be freed of these pests without injury to plants by drenching the infested areas with a 1 per cent emulsion. Kerosene emulsion should be applied preferably late in the afternoon and the plants thoroughly syringed with water the next morning before sun-up.

Fortified with nicotine sulfate, a kerosene emulsion insecticide for ornamental bushes is described (9, 10) as consisting of:

Soap chips	5 lb.
Water	10 gal.
Nicotine sulfate	1 oz.
Kerosene	10 gal.

Effective as a stomach poison, as a contact insecticide or as a fumigant, nicotine kills a wide range of both chewing and sucking insects. Sprays of nicotine usually are based on nicotine sulfate solution and soap. (7) As a contact spray, nicotine sulfate (40 per cent nicotine) is used at the rate of 1 to 2 pints per 100 gallons of water, to which may be added 2 to 4 pounds of soap to serve as a spreader and wetting agent. (6) For small scale work, a spray consisting of 1 tablespoonful of 40 per cent nicotine sulfate to 1½ gallons of soapsuds is very generally used. (11)

Such spray combinations are effective against aphids, some species of leafhoppers, adult whiteflies, the iris thrips, rose slugs, certain leaf miners, the young stages of plant bugs, mealybugs, and scale insects. Pea aphid studies (12) in Maryland have shown that nicotine sulfate-soap sprays containing three pints of nicotine sulfate per 100 gallons of water gave better kills of aphids than derris sprays. Foreign investigations (13) have demonstrated the ovicidal efficacy of similar combinations. It was found that an aqueous solution of 0.1 per cent pure nicotine and 0.5 to 0.75 per cent soap will kill the eggs of chrysanthemum gall flies. Young plants, it was suggested, should be sprayed every fourth day.

Pyrethrum may also be used in soap-containing solutions. A typical pyrethrum spray, to be used immediately upon mixing, consists of:

Potash coconut oil soap (40%)	1½ gal.
Pyrethrum extract (20 fold)	13 fl. oz.
Water	100 gal.

More common, perhaps, is the use of soap as a spreader or wetting agent in rotenone-containing materials like derris or cube. For example, 4 tablespoonsful of derris extract plus 2 one-inch cubes of soap (neutral coconut oil soap) in 4 gallons of water has been found to have some value against young harlequin bugs. (5) The following solution is said (10) to give good results against warble flies, a menace to cattle:

Soft soap	¼ lb.
Water	1 gal.
Derris powder	¼ lb.

Agricultural "warble fly dressing" consisting of derris resins or rotenone powder plus soap powder may be used for horticultural purposes as a dry dusting powder or as a spray after mixing it with water. (14) Patented insecticides (15, 16) containing derris extract or rotenone have specified the use of soap as a major constituent.

As a component of chemical insecticides, soap is useful as a spreader in Bordeaux mixture. (2, 17) It may also be employed in conjunction with phenol—as in the following paint for use on branches to combat avocado tree beetles: (10)

Soap	1 lb.
Crude carbolic acid	½ pt.
Water	3 gal.

Other instances of such utility are noted in recent technical reports. In investigations on the control of the olive fly by protective methods, Russo (18) found that good results were obtained with a spray containing:

Soft soap	1 part
Clay	3-5 parts
Copper polysulfide	3-5 parts
Water	100 parts

The value of xanthone as an ovicide and larvacide was recently demonstrated by the use of a spray consisting of:

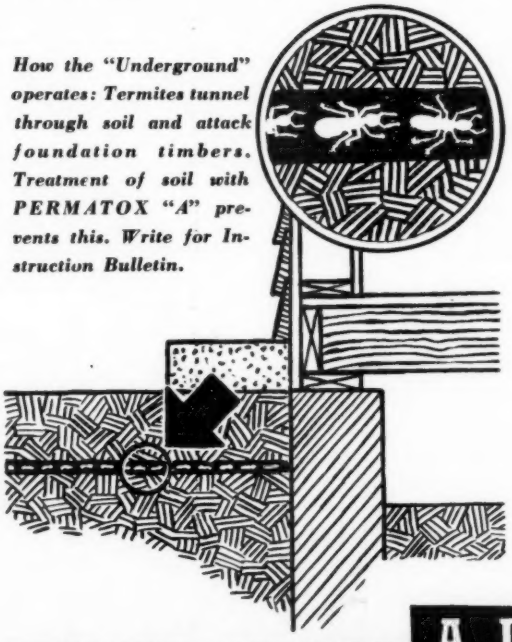
Xanthone	2 lb.
Zinc sulfate	4.5 oz.
Sodium oleate (soap)	1.7 lb.
Water	100 gal.

Applied in the spring, this mixture proved more effective than lead arsenate-Bordeaux-oil mixtures, while in midsummer the Xanthone spray gave better results than nicotine-oil preparations. The xanthone combination was most effective on eggs deposited soon after spray applications and deposited on foliage rather than on fruit. (19)

Lately, it has been demonstrated (20, 21) that the killing power of oil on mosquito larvae can be greatly increased if an extract of pyrethrum is added and the solution is emulsified with a potash soap. The concentrated stock emulsion consists of:

Light fuel oil	95 parts
Concentrated pyrethrum extract (contain-	

Halt the UNDERGROUND March of Termites



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Water .....45 parts

This should be freshly prepared and diluted in the proportion of one quart to 4 gallons of water just before use. It is said to be harmless to fish, water-fowl, and plant life and to have been used successfully at sewage disposal plants and in bathing pools.

For mosquito-breeding pools, where ordinary toxic chemicals are objectionable or unobtainable, ordinary soap may be used with good results. (22) In concentrations of 0.1 to 0.25 per cent it reduces the surface tension in still water so that pupae are unable to maintain their normal floating position and soon suffocate. Egg-laying is also interrupted. Higher soap concentrations, of from 0.5 to 1 per cent are said to kill the mosquito directly on contact.

Contact soap sprays, made of commercial fish oil soap or a good grade of household soap, dissolved at the rate of 1 pound of soap to 3 to 4 gallons of water, are useful for killing Japanese beetles. (23)

There is not room in this review to take up the role of soap in insect lures or repellents, or in insecticidal dips for sheep and cattle. These are important uses but to do justice to their techniques calls for a separate article.

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Please Notice

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BROTHER RAT:

Do Rats Rat Out on Rats? It's Shocking But They Don't — Tests Show They Co-Operate

By H. W. BLAKESLEE
(AP Science Editor)

Chapel Hill, N. C.—A discovery that rats can learn to co-operate with each other, for their mutual benefit, has been made at the University of North Carolina psychology department.

White rats in the laboratory faced and solved situations unlike anything a rat ever knew in nature, and as difficult for these animals as the new world situation is to human beings.

The experiments were conducted by Dr. William J. Daniel. He built a box whose floor was a grid of brass rods. In the middle of this floor was a food box, its top level with the floor.

At one end was a little platform, out of reach of the food box. The platform operated an electric switch, so that when a rat was standing on the grid floor and these rods were electrified just enough to give the animal's feet an unpleasant shock, he could escape by stepping on the platform and shutting off the current.

If he stepped off this platform, the current and shocks resumed.

Rats placed in the box soon learned how to rush to the platform to shut off the unpleasant current, and that if they left the platform to eat, they had to endure the shock.

After the rats knew this, they were placed in the box in pairs to see whether they would learn to take turns, one holding down the platform while the other ate.

They did just that, voluntarily and without any training.

They developed a surprising and amusing degree of skill. If the rat on the platform wanted a turn at the food, and got off the platform to shock his feeding companion, he also got the shocks.

If the rat at the food cup lingered too long to suit the other, the one on the platform would sometimes place one paw on the platform and switching the current on and off with the speed of a drum beat that would be enough to pry the other rat loose from the cup.

They really took turns more than 95 per cent of the time.

After the rats had learned to co-operate, less and less electric shock was needed to keep them co-operating But they never co-operated when there was no shock at all.

There were great differences in individual rats. A few co-operated just as little as possible, right to the point of nearly starving their companions to death.

But even among rats, the stinkers were the exception.

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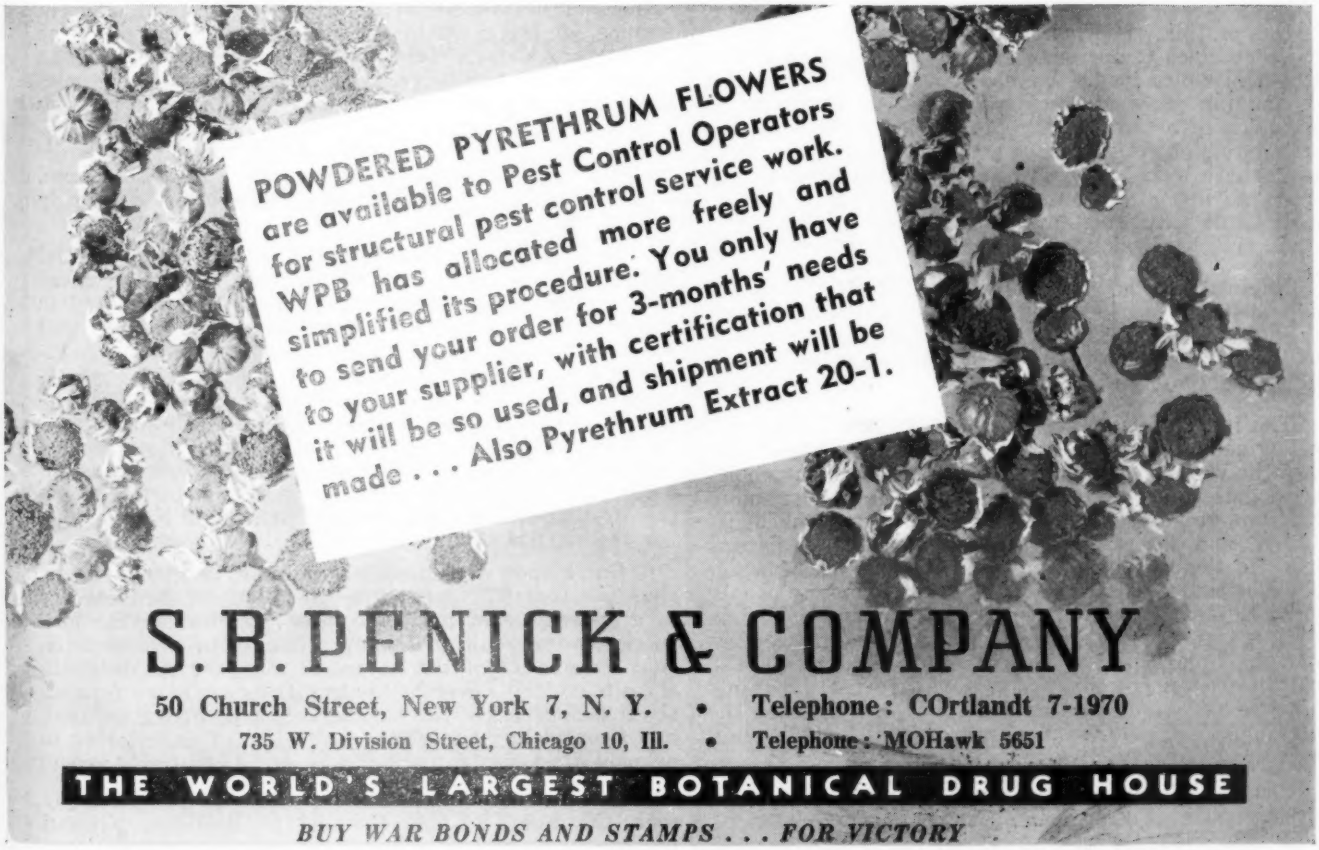
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THE QUALITIES OF A PROFESSION

By DR. VANNEVAR BUSH
President, Carnegie Institution of Washington

OUR principal concern is the engineering profession, and we inquire, what is the engineering profession; is it a profession at all; and if it is, will it develop into the full stature to which the importance of its works entitles it to aspire?

It is relatively young. The military engineer appeared in the first steps of the mechanization of warfare, when forts began to take shape. His counterpart in peaceful affairs was called a civil engineer. With the industrial revolution, and especially with the spread of mechanization from the factory into every walk of life, engineering became exceedingly diversified. Applying science in an economic manner to the needs of mankind is its broad field. Its disciples are spread over all the sciences as they become thus applied, and embrace also portions of economics, law, and business practice which are integral parts of the process of application. It is somewhat loosely organized as professions go. Until recently it has done very little in an organized fashion to inculcate in its younger members the philosophy of the profession, leaving this largely to those of its individuals who are also members of the teaching profession. That branch which represents the consultant, and others to a degree, have drawn codes; but there is no body of codified principles which is accepted and applied by the profession as a whole.

Out of this trend, as competition for industrial existence becomes tempered, should emerge a new profession with its own traditions and beliefs, which is capable of managing prosperity so that it will be conducive to the health of a nation; and there is grave question whether this objective can be attained in any other way. I wish there were a special order of knighthood in this country to honor and unite those who are now blazing the difficult path and developing the novel philosophy of this new profession.

Engineering, however, is derived jointly from the quiet cloisters of science, and from the turmoil and strife of aggressive business; and it is no wonder, therefore, that it should wabble a bit as it seeks to evolve its own professional philosophy.

The impact of science is making a new world, and the engineer is in the forefront of the remaking. He lights the way in a very literal sense. He brings peoples close together for better or worse, by facile communication and rapid transportation. He shortens the hours of labor, and fills the consequent leisure with distractions. He temporarily disrupts the techniques of whole industries, and thus alters the life habits of many people, in maintaining a continually rising standard of living. He bores through the earth and under the sea, and flies above the cloud. He builds great cities, and builds also the means whereby they may be destroyed. Certainly there was never a profession that more truly needed the professional spirit, if the welfare of man is to be preserved.

There is no lack of signs of a rising consciousness in this regard. The profession is most positively vocal. There is a vigorous new organization, linking several large groups, devoting itself to the improvement of the education of the young engineer, and the instillation of high principles during his early career. Engineering literature is full of discussions of the duties and responsibilities of the profession, and out of this may crystallize some day a code, a set of principles of conduct, a guide drawn solely with the object of advancing the public weal, which will become accepted by engineers everywhere, whether in government employ, private practice, or industrial organization. Having, to some extent at least, consolidated their techniques, engineers are certainly giving thought and voice to their position in society, and to their responsibility for the use of the great works which they create.

I know full well what restricted budgets mean. The argument that the support of the membership can be obtained only if they can see a direct and personal benefit from their contributions has a familiar ring. I recognize that it is entirely proper for professional men to join in an insistence upon a reasonable and proper recognition of their services to society. If there is no central organization which has as its creed the best service of the profession to the society of which it forms a part, then there will be in the end no engineering profession. Will engineers support such a program? Will they contribute directly or through their specialized societies to the development of ideals? Will they make possible great **forums** for the crystallization of engineering opinion on public questions involving engineering, not to attain an impossible unanimity or produce high sounding resolutions, but so that all aspects of controversial matters may be aired in order that people may know what engineers think? Will engineers go along heartily in developing a professional consciousness, a code of action, a philosophy which implements a desire to be a truly professional group?

If they will not, then there is no truly professional spirit to build upon. We may as well resign ourselves to a gradual absorption as controlled employees, and to the disappearance of our independence. We may as well conclude that we are merely one more group of the population, trained with a special skill, maintaining our economic status by a continuing struggle against the interests of other groups, forced in this direction and that by the conflict between the great forces of a civilized community; with no higher ideals than to serve as directed, and with no greater satisfaction than the securing of an adequate income as one member in the struggle for the profits of an idustrial age.

But I know the minds of too many engineers to be thus pessimistic. I recognize the distinguished careers of a generation of men who have practiced in the profession to its credit and honor. Though the task be difficult, on account of the nature of many of our relationships to society, nevertheless traditions are being formed, the consciousness of the membership is becoming aroused, and I confidently expect the profession of engineering to develop in a manner of which we can be justifiably proud.

And to those in the ranks, who may not have yet seen the light, I would preach the doctrine, without pulling any punches, without mincing any words, that

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the path of professional attainment lies open before them, that it is a thorny path that is easily lost sight of among the rocks and rubbish, that it can be adhered to only by sacrifice and by support of those who lead the way, that it is a long path which leads down into the valley into which the sun does not shine, but that it leads at last to the heights.

FOOTNOTE:

This article by Dr. Vannevar Bush, President of the Carnegie Institution of Washington, is reprinted by permission of the author and the Editor of Electrical Engineering, official publication of the American Institute of Electrical Engineers, where it was first published. Although referring primarily to the engineering profession, it parallels the pest control industry so well that we are presenting it to the industry and urge every pest control operator to read it carefully.

Traps, Wires, and Eagles Used by Owners to Keep Birds Away From Their Buildings

So many requests have been received for information apropos control of the pigeon nuisance, it has been deemed advisable to reprint the following article from our August, 1941, issue. (Original source N. Y. Times.) Of further interest is Wildlife Leaflet 236, issued by Fish & Wildlife Service, U.S.D.I., Chicago, Ill. Readers, meanwhile, are invited to send along any constructive suggestions on the subject.—Ed.

IN the midst of their rental, tax and maintenance problems, the owners of commercial buildings have taken cognizance of what they recognize as a "growing menace" to the comfort and satisfaction of their tenants —the bird nuisance resulting from the appearance of uninvited guests such as pigeons, starlings and the ever-present sparrows on and around their buildings.

The problem has taken on such proportions, varying from petty annoyance in some cases to a major issue in others, that the National Association of Building Owners and Managers has set out to find a solution. The suggested remedies—some unusual and all of them interesting—have been summarized in a report just issued by the association.

The suggestions range from the use of an electrical current or wave-length to which certain species of birds appear to be allergic down to the old-fashioned "shoo-fly" idea carried out on a big scale.

Some managers, the report discloses, resort to devices for scaring the birds away, or making it uncomfortable for them to remain. The more drastic remedy is to destroy them, but this, too, has its limitations, it is pointed out, for there are always more.

The commonest annoyance in most cities is the domestic pigeon. A novel but seemingly effective cure is reported by one member who writes: "For a good many years our building was infested with pigeons. We wasted considerable sums attempting to eliminate them, without success, until we engaged the services of a professional trapper who, with baited traps, provided himself with a succulent addition to his larder and a substantial fee from us. We have been without pigeons for the last five years."

A less drastic alternative is the use of chloride of lime. One building manager states that he has used this, or ordinary lye, quite successfully. The lye is sprinkled along the eldges and window sills, and chemical action with the moisture in the air makes an uncomfortable resting place.

When starlings congregate on a building they may pretty well blanket it and efforts to dislodge them are usually most effective at night. Roman candles have been used with at least temporary results and there is also the following suggestion:

"We, too, had a serious plague of starlings in the downtown district and have tried practically every method to rid ourselves of them. Finally, one of the engineers hit upon the plan of stringing 150-watt lights around the roosting areas. The starlings do not like light. If the object is to rid an individual building, I think this will do the trick."

A more elaborate procedure has been developed in an Ohio city, where parallel wires carrying high voltage were strung along ledges of a building, with immediate and effective results. The installation, however, was rather costly.

Another building operator in the same city is of the opinion that what accomplished the results was the "hum" derived from high-voltage wires, and that the same thing could be accomplished with less cost, and possibly less hazard, through stepping up voltage by use of a transformer. When the current is turned on there is developed a low-pitched hum, and in case of damp weather there is some sparking around the insulators. The theory is that the hum set up between two wires has a wave-length which is irritating to the birds, and for that reason they stay away.

One group of buildings reports that flares and shotguns, used at night, have been effective as a defense measure against a starling invasion. The cartridges, of course, are "blanks," noise and light being the most effective means, it would seem, for letting them know that their tenancy is not desired.

An ingenious device has been placed on the market commercially, consisting of metal strips with protruding prongs, to be installed on the building ledges and cornices, thus making it uncomfortable for the birds to roost or congregate on those portions of the structure.

Still another suggestion is the use of long bamboo fishpoles, with streamers attached, in the hands of a group of efficient employees, to "shoo" the birds away. This is done for about fifteen or twenty minutes at dusk, and repeated nightly for a period of four or five days, and is said to be effective, particularly in ridding the structure of sparrows for the season.

Other methods tried, according to the files of the National Association of Building Owners and Managers, have included the use of stuffed owls or hawks, and in one case even a live eagle to keep the birds scared away. But some who have resorted to this report that the feathered tribe can only be "out-smarted" by such subterfuges for a short time, and soon come back to their favored haunts.

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New DDT Spray Rids Cattle of Fly Torment, Tests Show

Kansas Farmers Who Have Observed Results Are Clamoring for the Chemical, But None Is Available Except for Experimental Purposes due to Army Demands.

Kansas cattle have no reason to switch their tails for comfort after spraying with DDT, a fly control experiment started June 11 has revealed.

The trouble at present is that no DDT is available except for experimental purposes. Farmers who have observed the treated cattle are clamoring for the chemical which rids the animals of the fly torment in barns and pasture.

Vast Quantities to Army

Army use of the chemical spray, to eliminate insects in the Pacific, requires vast quantities of DDT, leaving only enough for experimental use on the home front.

Cattle sprayed are free from flies from ten to fourteen days after one treatment, results in Kansas indicate. Scientists and farmers agree that the experiment results are excellent.

More than 5,000 head of cattle have been sprayed with or dipped in a DDT solution in Kansas. Many head have received a second treatment and all will have received the second soon. As had been expected, the first application of the DDT applied to cattle in pastures was effective ten to fourteen days. The chemical does not kill the fly eggs. By ten or twelve days a new brood has developed.

Into Sixteen Counties

Sixteen counties were visited by the scientists on their first trip around the state in the DDT test, which is the most extensive of its kind yet undertaken in America. The test is to learn the effectiveness of the DDT on flies under actual farm and ranch conditions. In fourteen of the counties the cattle were sprayed, in all but one instance with a .02 per cent solution of the DDT. On J. J. Moxley's farm in Morris County, where the cattle have a woods pasture in a creek bottom, a 2½ per cent solution was used in an effort to get horse flies.

In two counties cattle were dipped in a .01 per cent solution. Ray L. Cuff, regional manager at Kansas City of the National Livestock Loss Prevention board, notes that the dipping does a better job in getting complete coverage of the animal with the chemical, but it is more expensive and involves more work than the use of the spray. The spray can be taken to the cattle while it is necessary to drive the cattle to a dipping vat.

In addition to the cattle treated, twenty barns were sprayed. Four were dairy establishments, the others cattle barns or feeding sheds. Also horses, hogs and dogs were sprayed if they were handy about when the sprayer was on the farm.

No Flies for Ten Days

The general observation has been that for the first ten days after the cattle were treated they were virtually clean of flies. After the tenth day the flies came on fast indicating the necessity of the second treatment. Mr. Cuff is of the opinion the second spray or dip will be effective for a longer period than the first and that a third treatment will last out the fly season.

Noticeable about the treated cattle is that they fan out in the pasture while eating instead of bunching which is the usual procedure of livestock seeking protection from tormenting flies.

—The Kansas City Star.

Typhus Is Rat Borne

By **DR. THEODORE R. VAN DELLEN**

Despite the fact that sanitation in this country is at a comparatively high level, we continue to harbor typhus fever. In fact, certain states encounter the ailment routinely.

We all are familiar with the ravages of this malady. In continental Europe, during the first World War, it caused the deaths of more than 150,000 Serbians; while more than a million succumbed in Russia between 1916 and 1922. We owe to Charles Nicolle, a French scientist, the knowledge that the epidemic is spread by the body louse. Conditions which favor crowding, filth, and undernourishment are factors in its spread.

But there is another type, which is disseminated through the fleas of rats. The host is the gray variety although other rodents may be responsible. Because of our large rat population, it behooves us to remain alert to the vicious role of vermin.

What are the symptoms of this dread disease? The onset is usually abrupt, with fever, chills, severe headache, and aching muscles. Bronchitis may come on rapidly and coughing will disturb sleep. Curiously enough the patient is dull and listless and, within 24 hours, may become delirious.

About the fourth or fifth day, the characteristic rash breaks out. Meantime, the family has probably received a diagnosis of influenza. Reddish spots appear on the chest, the abdomen, the back, and the extremities. Fading may begin as early as the third day, but may not start until two or three weeks thereafter. The mouth is dirty and foul; in some instances, the digestive upset will dominate the picture. In areas where tick fever is common, some difficulty may be encountered in deciding what is wrong. But of the two ailments, tick fever will probably be more serious. . . .

From The Chicago Tribune.

Notice

From time to time subscribers mail their renewals, giving their personal name rather than the name under which they have been receiving Pests. If such subscribers desire their personal name listed instead of that of the firm, please notify us in order to avoid duplications. Then too, when subscriptions have expired and are renewed, we are not able to know whether or not the renewals are new subscribers when they fail to state the change.

This is very embarrassing when subscribers receive an invoice from us about their renewals and then we receive letters that they have renewed, but under another name.

Will you please let us know if you receive occasionally notices or inserts regarding Pests if you are already receiving Pests? We desire to have our mailing list accurate and correct and your cooperation will help us to do so. Thank you.

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The new book "Spray Chemicals and Application Equipment" is the result of six years research and collection of data by Wayne B. Fisher, B.S.A., Purdue University, chemical sales representative, and commercial horticulturist, cooperating with Dr. J. A. McClintock, Professor of Horticulture, Purdue University (co-author).

The book "Spray Chemicals and Application Equipment" is divided into two parts. Part one gives the interesting historical background of many chemicals and detailed discussions and photographs showing how they are manufactured. In addition, much discussion is devoted to methods of using spray chemicals, to insects and diseases controlled by the specific chemicals, and to methods of improving present day pest control practices.

Part two is a complete discussion describing almost every type of sprayer and duster available to the public for use in applying spray chemicals. About 300 illustrations are included in this section, and all types of equipment are shown ranging from the simplest atomizer sprayer to the largest commercial sprayers and airplane dusting equipment. Price $4.00 plus 15c postage

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RESEARCH

DDT Powder for the Control of Lice Attacking Man

Summary.—DDT was tested first against lice at the Orlando, Fla., laboratory of the Bureau of Entomology and Plant Quarantine in November, 1942. A louse powder containing 10 per cent of DDT in pyrophyllite was recommended to the armed forces in May, 1943.

In arm-and-leg tests DDT at 0.25 per cent concentration caused complete mortality of body lice in 24 hours, but had little lasting qualities. Powders containing 1 per cent of DDT usually gave complete kill of lice for 8 to 10 days. A 5 per cent DDT powder was effective 14 to 16 days, and arm-and-leg sleeves treated with a 10 per cent powder generally gave complete kill for 30 to 40 days. In tests on grossly infested subjects a 10 per cent DDT powder gave practically complete kill of lice for 3 weeks.

All the lice exposed to a 10 per cent DDT powder were knocked down in 6 hours and were dead in 20 hours. Exposure to this powder for 3.5 hours prevented hungry lice from feeding. Lice starved for several hours were more susceptible to DDT than were freshly fed lice.

DDT mixed mechanically with powder diluents proved equally as effective as powders prepared by the solvent-mix method. Tests with various diluents indicated that pyrophyllite and certain grades of talc were the most suitable.

Within the range of sizes tested (6 to 17 microns) the particle size of the DDT did not appreciably influence the effectiveness of the louse powder. Dusts made with pyrophyllite diluent of particle sizes of 5 microns or less were more effective than those made with diluent of larger particle sizes.

A powder containing 10 per cent of DDT did not lose its effectiveness after several months' exposure to the open air or when stored at 60° C. (140° F.) for 2 months. However, after 10 months' exposure at this temperature it lost about half of its toxicity.

Garments dusted with DDT remained effective against lice after one washing but was not effective after two washings in warm soap and water.

Of more than 100 compounds tested as possible synergists for DDT, none showed marked synergistic action. The addition of an oil to a 5 per cent DDT powder did not prolong its effectiveness.

The 10 per cent DDT powder was found highly effective against crab lice in the more than 100 cases treated.

—*R. C. Bushland, L. C. McAlister, Jr., Howard A. Jones, and G. H. Culpepper, Jour. Econ. Ent., April,* 1945, *Vol.* 38, *No.* 2.

Toxicity of DDT to Fish

Summary and Conclusions.—Observations in the course of field experiments with mosquito larvicides containing DDT have indicated that this chemical is toxic to black bass, catfish and salt water minnows. Laboratory experiments with various concentrations of DDT applied as (1) colloidal dispersion, (2) oil emulsion and (3) dust have shown high toxicity to goldfish.

—*Joseph M. Ginsburg, Jour. Econ. Ent., April,* 1945, *Vol.* 38, *No.* 2.

Orlando Scientists Develop New Insect Repellents

Development by entomologists of the USDA of new insect repellents, effective against mosquitoes and chiggers, and to a lesser extent against wood ticks, may now be revealed. These repellents, which include dimethyl phthalate, have been used extensively by the allied armies since 1942. They are not yet available for civilian use.

In May 1942 when dimethyl phthalate was tested at the Orlando (Fla.) laboratory as a repellent against mosquitoes, it was found to be more effective for preventing bites of the malaria mosquito, than any other compound known at that time. Immediately after it was found to be safe for use on the skin of man by the Pure Food and Drug Administration, it was made available to the armed forces, where it was urgently needed. The information developed by the Bureau of Entomology and Plant Quarantine and the Food and Drug Administration served as the basis for such early use of dimethyl phthalate as it was already in production for civilian use (for other purposes) and could be manufactured with existing equipment. Later, an improved mosquito repellent using dimethyl phthalate as one of the ingredients was developed at the Bureau's Orlando laboratory. It was found that this mixture was more effective for a variety of mosquitoes and biting flies than the pure dimethyl phthalate. This development has enabled the armed forces to issue a single repellent for the protection of personnel against a variety of insects.

In 1942, research workers, A. W. Lundquist and A. H. Madden, tested many materials against mites known as "chiggers." It was found that dimethyl phthalate, as a liquid insect repellent, when properly applied to clothing assured that the person using it would be safe from mite or chigger attack. This repellent is applied lightly to the inside of the cuff of trousers and sleeves as well as the buttoned surfaces of the shirt. This barrier prevents chiggers from crossing it and attaching to the skin of man. It kills the ones that are not repelled by it. Dimethyl phthalate has been used extensively and with great success against chiggers by allied military forces in the Pacific theaters.

Additional Patents Relating to Pest Control

By **DR. R. C. ROARK.**

2,374,955 (May 1, 1945; appl. Aug. 2, 1943). SPRAYER. Doyle O. Raper, Arbuckle, Calif.

2,376,105 (May 15, 1945; appl. Mar. 6, 1944). ESTERS OF THIOCYANO-SUBSTITUTED ORGANIC ACIDS. Paul H. Williams, Berkeley, Calif.—Shell Development Company, San Francisco, Calif.—An example is 4-tert-butylcyclohexyl thiocyanoacetate. These compounds are insecticides, fungicides and parasiticides.

2,374,999 (May 1, 1945; appl. Sept. 24, 1940). PEST CONTROL. George E. Holbrook, Wilmington, Del., and Frank H. Kaufert, St. Paul, Minn.—E. I. du Pont de Nemours & Company, Wilmington, Del.—A method of protecting wood and wood products from attack by termites comprises impregnating the terrain surrounding the wood with a eutectic mixture of isomeric dichloro-mono-nitrobenzenes.

2,375,095 (May 1, 1945; appl. Jan. 23, 1941). INSECTICIDES. Lawrence H. Flett, Hamburg, N. Y.—Allied Chemical & Dye Corporation, New York, N. Y.—A process of controlling insect pests infesting vegetation comprises spraying on said infested vegetation a solution containing as an ingredient toxic to insects a mixture of alkylated sulfonates of benzene.

2,375,382 (May 8, 1945; appl. March 2, 1940). INSECTICIDES. Kasper Pfaff, Michael Erlenbach, and Walter Finkenbrink, Frankfort-on-the-Main-Hochst, Hans Maier-Bode, Wolfen, Kreis Bitterfeld, Kurt Meisenburg, Leverkusen, and Marianne Meisenheimer, Leverkusen-Kuppersteg, Germany.—Winthrop Chemical Company, Inc., New York, N. Y.—An insecticidal composition of matter comprises tetranitro-carbazole and an inert extender.

2,376,291 (May 15, 1945; appl. Dec. 8, 1941). PROCESS OF RENDERING MATERIALS GERMICIDAL AND GERMICIDE THEREFOR. Frank J. Sowa, Cranford, N. J.—A composition having germicidal properties and comprises a pentavalent nitrogen salt of an organic mercurial.

Wanted: One or Two Copies 'Our Enemy the Termite"

If you are the owner of a copy of Dr. Thomas E. Snyder's book of the above title and would like to dispose of it, won't you kindly contact William O. Buettner, secretary of the National Pest Control Association, 3019 Ft. Hamilton Parkway, Brooklyn 18, N. Y., at your earliest convenience? You will be paid $4.00 for your copy—or $1.00 over the original publication price. You are assured, if any assurance is necessary, that the books will be used to further the best interests of the Industry.

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WHAT'S NEW IN PEST CONTROL-PERSONALS

BETROTHED: MISS DOROTHY NEWMAN, winsome daughter of Jacob Newman and capable associate in his chemical and exterminating business in Holyoke, Mass., was engaged recently to Pvt. Paul E. Gerhardt of the same city. Apropos wedding date, Dottie writes: "I've got 'Jake' kind of worried as he is afraid he is going to lose me—but, he has nothing to worry about for a LONG time!"

OPENS OFFICE: C. C. McDONNELL, D.Sc., formerly Chief Insecticide Division, Office of Marketing Services, U. S. Department of Agriculture, announces the opening of an office at 122 Hesketh Street, Chevy Chase 15, Md. (Tel. Wisconsin 1905 Wash., D. C. exchange), as technical consultant on labeling, advertising and control of insecticides, fungicides, disinfectants and caustic poisons under the insecticide act of 1910, the Federal Caustic Poison Act and other laws.

The engagement of DON LEWIS, Assistant District Agent of the Fish and Wildlife Service, Ithaca, N. Y., to Miss Barbara Chamberlain was announced recently. The wedding will take place on Friday, August 31st, at the East Aurora Presbyterian Church. Don, son of Harry Lewis, Rose Ext. Co., Buffalo, attended Bucknell University, while Miss Chamberlain is a graduate of Rochester Institute of Technology.

THE GAG OF THE MONTH:

He: "What a time we're going to have at the picnic. We'll sit on the grass and eat sandwiches, potato salad and cookies."

She: "Did you bring any ant-paste?"

He: "No, they'll have to eat what we eat."

LT. FRANKLIN RADER KILLED IN AIR CRASH: Lieutenant Franklin Rader, son of Mr. and Mrs. George A. Rader, Berkeley, California, was recently killed in an air crash over England. Lt. Rader had more than 200 hours combat duty as a P-47 fighter pilot, and was expected to return home on furlough soon. He made the supreme sacrifice while in the armed service of our country.

The members of the Pest Control Industry extend their deepest sympathy to his bereaved famliy.

C. P. C. News.

W. G. BYWATER, Ph.D. NOW DIRECTOR OF RESEARCH WITH S. B. PENICK & COMPANY

S. B. Penick & Company, botanical drugs and fine chemicals, announces the appointment of W. G. Bywater, Ph.D., as Director of Research. For the last ten years a leader of research work on the staff of Parke, Davis & Company, Dr. Bywater is the author of many publications dealing with specific chemical problems.

A native of Utah, Dr. Bywater received A.B. and M.A. degrees from the University of that state; later working in chemistry with Professor Henry Gilman and others at Iowa State College, to attain a Ph.D. degree. He also taught chemical subjects at both of these institutions.

Dr. Bywater has been a member of the American Chemical Society since 1930; Councilor of the Detroit section in 1944 and 1945; and Chairman of the American Association for Advancement of Science Gibson Island Medicinal Chemistry Conference in 1945.

In connection with Penick research plans, it is announced that complete reorganization and expansion of the present laboratories has begun, and new building is contemplated. The company expects to erect a research building on land adjacent to its Lyndhurst, N. J. plant, with probable extensive increase of its present research activities.

BOY, FIREMEN FAIL TO SAVE LIFE OF DOG TRAPPED IN FUMIGATION: Despite the efforts of firemen and a 15-year-old boy to save his life, Imper, a 7-year-old cocker spaniel yesterday succumbed to the effects of poisoning from fumigation operations in a house at 583 Tremont St.

The dog, inadvertently locked into the kitchen before the fumigation began, was carried out by firemen wearing gas masks and revived, but died several hours later.

Firemen of Supply Company No. 1 were summoned by Eugene Webster, 15, of 589 Tremont St., who saw the dog through a window of the house and raced to the firehouse to report his plight. Imper's mistress was Shirley Dousett, 1, of 608 Tremont St.

Note: This happened in Rochester, N. Y., June 16. The fumigant was sulphur and no pest control firm was doing the job. Imagine a PCO doing a Cyanide fumigation only a few doors away on the same day and the office of the PCO being called thinking that perhaps it was their job.

CALIFORNIA LICENSES AIRPLANE PEST CONTROL OPERATORS: All persons engaged in operating airplanes used in eradicating or controlling pests shall be classified as "Airplane Pest Control Operators" and must be qualified by examination under amendments added to Section 150 of the State of California Agricultural Code according to Senate Bill No. 591, recently approved by the State Legislature and sent to the Governor for his signature.

LEGISLATION: The Los Angeles City Rodent Control Ordinance, amending Section 36.38 of the Los Angeles Municipal Code, which was passed by the Council of the City of Los Angeles on May 1, 1944, should be of help to the PCO in the control of rodents if proper coordination with the health department of the city is practiced.

TICKS AND MAN

On yonder hills 'midst winters chilled earth,
The deadly arthropod in slumber, unseen, anew
Awaits to tread its fatal steps, and to its host give birth
To some unknown malady—while in situ.

Hath not man in his hour of proving,
Enough of human woe to heal and undo,
Than await the fateful hour of his undoing
From this ill conceived creature while in situ?

Oh, Mother Nature—In glory behold!
Is it not for man to ponder and question anew
Man's inhumanity to man untold?
But, to crown his spirit with grief, by an arthropod in situ.

Charles Pomerantz.

TICKS

Arthur Gibson, Dominion Entomologist at Ottawa, reported as follows: "It is noteworthy that the bite of the wood tick is usually painless, and we have encountered cases in which an area of gangrene was forming around a bite, or in which tick paralysis was already developed without the patient aware that the live tick was still in situ."

RATS HAVE CHICK BONANZA

Seventy Lost Fowls Are Found in Rodent Hole, Ten Still Alive.

SEDALIA, MO. (AP) — Betty Harker missed seventy of her 103 baby chicks. She called police. Officers found the missing birds in a large rathole. Ten of them were still alive.

RESEARCH—Controlling Insects in Flour Mills—By R. T. Cotton, Senior Entomologist, J. C. Frankenfeld, Bureau of Entomology and Plant Quarantine, Agricultural Research Administration, and G. A. Dean, Entomologist, Kansas Agricultural Experiment Station. Circular No. 720, April, 1945. Discusses the many methods proved useful in preventing insect infestation in flour during the process of manufacture and subsequent handling. It is a revision of and supersedes Circular 390, Flour Mill Insects and Their Control.

For sale by The Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. Price 15c in coin.

GUERRILLA TEST: Captain Truman Heminway, Jr., of Sherburne, Vt., in an account of his experience released by the Army, said the measure of an American's stay in the jungle was this: "The first six months, if ants get in the food the American throws the food away. The second six months he picks out the ants but eats the food. The third six months he eats the food, ants and all. The fourth six months if any ants try to escape he recaptures them and puts them back in the food where they belong."

HUMANITARIAN—A lady strolling in Morningside Park was stopped by another lady, middle-aged, well dressed, and obviously distressed. "Look!" the second lady said, pointing to the ground. The first lady looked, and saw a large beetle. "It's just a beetle," she said. "It won't hurt you." "I know that," the other lady said. "But he's on his back. Do you think he wants to be turned over?"

From The New Yorker.

RODDA LEAVING WPB: John A. Rodda, for two and a half years in charge of the Insecticides and Fungicides Unit, Inorganics Branch, War Production Board, has resigned effective July 25.

Melvin Goldberg, who has been his assistant and closely identified with the aerosol and DDT programs, will succeed him. The announcement from J. W. Wizeman, chief of the Inorganics Branch, says "these two officials have worked effectively as a team in the military insect control program, the food and fibre crop protection programs, and the provision of insecticides for civilian public health. Mr. Rodda is not yet ready to announce his plans. He served 20 years in this industry.

DDT: Class B poison description for DDT has been cancelled by the Interstate Commerce Commission. The material is therefore removed from the category of regulatory products.

Dead Rat

and Other Odors Can Now be Effectively Eliminated by the Use of

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THE ODORLESS DEODORANT

Acclaimed by Pest Control Operators from Coast to Coast as a Wonderful New Development in handling ODOR problems.

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Used professionally it assures customer satisfaction.

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Pest Control Operators know that to do their fumigating work safely, they need a dependable Gas Mask. Working with poisonous gases and liquids make it necessary that the right gas mask be used.

Safe Protection is provided in the Acme No. 4 FULL VISION All-Purpose Gas Mask. This Mask has the well known Acme wide, flat Safety Glass Lenses which DO NOT distort the vision, but allow freedom of FULL VISION to all sides, speeding up the work of the operators. The Acme Mask and Canister protect against any fumigating gas, or combinations of gases. Write for literature and prices.

BUY WAR BONDS OFTEN

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Manufacturers of Respiratory Protective Devices

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W. H. McCain, Extermital Chemicals, Named on Dayton (O). "Rat Committee"

Plans to make Dayton an unhealthy place for 350,000 unwanted dwellers got the approval in July of a group determined to run them out of town.

The long-range program to rat-proof Dayton was considered at the first meeting of the rat control committee in the municipal building.

Eliminate Rat Homes

"The plan is not just to kill a lot of rats in a few days, but to eliminate the places where they live and get their food," Mayor Frank M. Krebs explained.

A program outlined by W. H. McCain, representative of a national pest control organization, was considered by the committee.

That program includes: First, ratproofing the city; second, cutting off the rats supply of food and water, and third, extermination of the pests.

Ratproofing the city would take years, McCain pointed out. But only by doing this can the city eventually become rodent free, he said. Extensive killing is a temporary step, which must be repeated over and over.

Buildings Repaired

Buildings must be repaired so it is impossible for rats to enter or leave. Underground passageways used by rats must be eliminated.

Immediate action, however, can be taken to eliminate trash and garbage deposits which attract rats. New garbage cans and trash containers in homes as well as business establishments will help cut their food supply.

Committee a Nucleus

The committee is the nucleus of an active organization representing various Dayton business groups. Those present and the businesses they represented were Hugh H. Hoffman, insurance, elected chairman of the committee; Merritt Culp, restaurants; Arthur C. Stock, contractors; Frank Sullivan, building managers; Neil Stire, druggists; City Manager Fred O. Eichelberger, City Welfare Director E. V. Stoeckline, Mayor Krebs, Dr. Williams and McCain. Ray Yount, architects, and Leslie Diehl, Chamber of Commerce, were unable to attend.

It was voted to add grocers, hotel managers, retail merchants, commissioners, plumbers and electricians to the committee.

KENYA PYRETHRUM DELEGATION: Visiting this country recently in the interests of Kenya Pyrethrum was a delegation, comprising Commander F. J. Couldrey, Chairman, Kenya Pyrethrum Board, R. E. Norton, another member of the Board, Dr. A. B. P. Page, scientific advisor to the delegation and Paul Jefferies, representing Mitchell Cotts & Co., Ltd. of London. Delegation made its headquarters at the Greene Trading Co., N. Y.

HOUSEKEEPING PAYS: The British use small portable vacuum cleaners in storage rooms, particularly for grain. Accumulations of dust and loose grain in floors, beams and ledges provide ideal breeding places for weevils and other organisms. Portable cleaners of the flexible hose type, with electric or gasoline driven blowers operating outside of the storage building, reach otherwise inaccessible spots, with great improvement to the quality of stored grains.

INSECTICIDE FROM BENZENE HEXACHLORIDE: A new insecticide developed in England is said to be particularly effective against locusts, crickets, the body louse, bedbug, leaf eating larvae and beetles, weevils, ants and wasps. The new insecticide is reported as being derived from benzene hexachloride.

—Inside News.

SHARK-REPELLENT: The development of a shark-repellent, one of the interesting technological achievements of this war, is described in For Instance, No. 10, 1945, this being an organ of American Cyanamid Company. Sharks, it is explained, are not really as inimical to man as their evil reputations would make us believe. Nevertheless, the few casualties, and the universal fear, made this study a necessary project. It was discovered that living sharks shied away from waters which contained dead sharks, and from that point on the search for the shark-repellent was systematically pursued.

DDT: Unless occasional misuses of DDT by industry consumers are stopped, the WPB warned it may be necessary to allocate the chemical. The Board also advises that DDT will still be available in limited quantities for experimental purposes in the third quarter.

PHILADELPHIA'S PIGEONS GET 3-MONTH REPRIEVE: The pigeons in the public squares and parks of Philadelphia have been given three more months to live before they are exterminated as a health menace, according to the N. Y. Herald-Tribune.

The order to destroy the birds by gas because nearly half of the pigeons are infected with ornithosis, similar to parrot fever, was delayed because this is the mating season. William Phillips, manager of the Pennsylvania Society for the Prevention of Cruelty to Animals, said.

Meanwhile, bird lovers continued to feed the pigeons, although Dr. Rufus S. Reeves, Director of Public Health, had warned that the practice was dangerous.

BUFFALO PIGEONS TO SEE DOCTOR: Buffalo's pigeons will be brought into the laboratory to determine whether they, like Philadelphia's pigeons, are to be sentenced to death as disease carriers, health commissioner Francis E. Fronczak decided on June 22.

PIGEON WHISTLE HAS PRIORITY TROUBLE: Spokane, Wash., June 26 (A. P.)—Lee Klos, electronics engineer, says priorities are holding up manufacture of his pigeon whistle.

The device is a high frequency oscillator resembling a small radio, which lets out a whistle that cannot be heard by human ears. Klos says that it can be adjusted to disturb cats, rodents and dogs as well as pigeons.

BALTIMORE PIGEONS TO BE TESTED FOR DISEASE: Baltimore's pigeons that roost on buildings and feed in the streets and squares are to be subjected to tests to determine whether they are carriers of parrot fever or other diseases.

The examination is to be made under the direction of Health Commissioner Huntington Williams at the suggestion of Mayor Theodore McKeldin.

PRESIDENT BELIVEAU LOST IN CAPITAL: While Arthur A. Beliveau, president of the Pest Control Operators of Calif., Inc., was in the Senator Hotel, Sacramento, he asked Bill Hogan where the gentlemen's rest room was located, to which Bill replied, "Over there by the telephone booths."

When Art could not find the proper door, he steps into a telephone booth and phones for Bill. The bellboy wandered through the spacious lobby of the hotel paging Mr. William Hogan.

Bill, very anxious to answer his senator's friends calls, hurried to the telephone booth to answer the call.

"Hello," said Bill.

"Say, where did you say that room was?" asked Art while standing in the adjoining telephone booth. (Each greeted the other as they left the booth.)

—C. P. C. News.

NEW TYPE INSECTICIDE ATOMIZER: A new type atomizer for the spraying of insecticides has been developed which is said to give unusually fine and effective dispersion. One-half cc of a 20% DDT solution is said to be sufficient to give effective treatment of a 1,000 cubic foot space.

—Inside News.

Reporting on the DDT allotted by the U. S. Public Health Service to spray 3,600 rural and 1,700 North Memphis homes, the Memphis, Tenn., Press-Scimitar, of April 24, 1945, said, "Residents of the homes being sprayed said they have been sweeping up piles of dead mosquitoes."

The Cincinnati, Ohio, Times-Star of April 26, 1945, related that some 300 political prisoners liberated by Yanks in Germany "voted unanimously for a ration of DDT ahead of food, although they hadn't eaten for four days."

HEALTH DEPARTMENT INSPECTORS TO BE LICENSED BY THE STATE OF CALIF.: Under new sections added to Article 5, part 2, of the State Health and Safety Code, and known as Senate Bill No. 319, now before the State Legislature, a "Sanitarian" means a person trained in the field of sanitary science and technology who is qualified to carry out educational and inspectional duties and enforce the law in the field of sanitation and shall be qualified by examination as provided under section 542 (b) of this act.

C. P. C. News.

WILLIAM HOGAN, EDITOR PCO NEWS CONVALESCES AT HOME: Hard-working editor of the PCO News, Mr. William Hogan, was recently moved from the hospital to his home where he is gradually gaining in strength. Bill desires to publicly thank and is very grateful to the many friends of the industry who have so graciously given of their blood, time, and efforts for his recovery. *C. P. C. News.*

PUBLISH WARNING LABEL GUIDE: "A Guide For the Preparation of Warning Labels for Hazardous Chemicals," a publication of The Manufacturing Chemists' Assn., Washington, D. C., was issued early in June.

JONES BEACH DE-BUGGED: There were more dead bugs on Jones Beach yesterday than dead Japs on Okinawa. Two treatments of a Todd Shipyard DDT fog generator to kill insects were employed before the Sunday crowds started arriving. It was the first civilian beach test of the insecticide. Observers said that after a truck had blanketed a four-mile stretch of the beach, "mosquitos were staggering within five minutes and died quickly thereafter. Within half an hour, all insect life was dead." The fog, which quickly rolls away, is not harmful to humans.

—N. Y. News.

U. S. DA. LEAFLETS: Experiments with DDT for Control of Insects Attacking Cereal and Forage Crops in Field and in Storage.

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FOR RODENT CONTROL

STANDARDIZED
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FORTIFIED
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PHOSPHOROUS PASTE

FOR ROACHES and RATS

SINCE 1874

J-O Phosphorous Paste is so compounded as to eliminate the hazard of fire and possesses advantageous qualities peculiar to itself. A properly made **Phosphorous Paste** such as **J-O** is absolutely safe to use. It cannot burn or set fire to other substances.

Phosphorous, however, remains basic in the compound because it is the most toxic chemical used in pest exterminating, being more toxic than arsenic, strychnine or thalium. Approximately one-tenth of a grain will kill a rat. Phosphorous is a slow poison, taking from 6 to 18 hours to kill. Due to its slow but positive action, the rat succumbs to this poison. He becomes very uncomfortable and, seeking fresh air and water, in most cases, leaves the premises and dies in the open.

For all species of roaches, this product is **UNEXCELLED.**

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Gain prestige and appreciation — build steady profitable business by showing film to Health. Food, and Sanitary Inspectors, men's service and women's clubs, associations and organizations, real estate boards, hotels, restaurants, groceries, groups in small towns, etc. $110.

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With thallium sulphate difficult to obtain, try RUMETAN . . . the ideal poison for Rats, Mice and Mole Crickets. Effective and economical. Write for details.

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EMPIRE STATE BUILDING, NEW YORK

Compiled by C. M. Packard. E-640. 9 pp. Processed.

Formulation of DDT Sprays and Dusts. R. D. Chisholm. E-643. 7 pp. Processed.

Results of Tests Made with DDT Against Japanese Beetle in 1944. C. H. Hadley and W. E. Fleming. E-645. 7 pp. Processed.

DDT USED IN SWEDEN: DDT, introduced into Sweden in 1943 as Gesarol, has been used principally for plant protection, although experiments are under way to develop products for veterinary and human use. Between 60 and 80 tons were consumed in 1944, both of the Swiss type and the cheaper Swedish type. It has been found effective against the pine moth in forests where airplanes have been used for spreading it.

—Chem. & Eng. News.

DDT IN PAINT: June issue of "Witcombings", published by the Witco Chemical Co., N. Y. Discusses DDT in Paint.

THANITE: "Development of a Terpene Thiocyano Ester (Thanite) as a Fly Spray Concentrate", titles a 58-page booklet just published. Written by Roger L. Pierpont, of Delaware Univ., it covers nine years of development work.

THE CAT IN THE LIBRARY: L'Epoque, a usually staid Paris daily hazarded a political revelation. A cat, it charged, was carried on the budget of the Bibliotheque Nationale, France's vast and ponderous national library. The cat, maintained by the library to discourage rats from gnawing the bindings, was said by L'Epoque to have died recently after giving birth to kittens and had been circumspectly replaced by a male.

Time's Paris Correspondent Sherry Mangan telephoned the library, was connected: 1) with the chef of the library canteen, who admitted a change of cats but was not sure of the new cat's sex; 2) with the lady manager of the canteen, who refused to become embroiled in politics; 3) with a bull-voiced man who, apparently jealous of the library's dignity, denied that it maintained a cat of any sex. But L'Epoque stuck to its guns, insisted that the cat was a regular government **fonctionnaire** and that its upkeep allowance was 30 francs (60c) a year.

—From Time Magazine.

PROFESSOR GIVES JANITORIAL ADVICE: More "professionalization" in school building maintenance was advocated by Dr. John K. Norton of Teachers College, Columbia University, on June 26 when he opened the seventh annual conference of custodial engineers at Columbia. "Workers in any area are rewarded economically and have social status in the respect that they make their work skilled," he told about 100 school janitors, chiefly from Eastern States, who are attending the course. . . .

"Building service is recognized as more than keeping a place clean," Norton went on. "It means keeping the school attractive and comfortable and increasing the effectiveness of those who work in these buildings. This conference itself is a proof of the professionalization of plant maintenance and operation."

—N. Y. Sun.

INSECT SCREENING — The supply of metal insect screening for civilian use is far below estimated minimum requirements because of the tremendous quantities needed by the military in the Pacific area, the W.P.B. said in amending Order L-303 to make certain that the limited amount available for civilians is used for the most urgent and essential needs.

LOCAL ORGANIZATION NEWS

Florida Pest Control Association

At an Officers' and Board of Directors' meeting of the Florida Pest Control Association at Daytona Beach on June 28th, the following committees were appointed:

Legislation Committee:
W. G. Waldron, Chairman
David R. Barnhart
Ray K. Parks
Theodore Oser

Membership Committee:
W. A. Snare, Chairman
Ray K. Parks
J. P. Walker

—Report submitted by Walter A. Helms, Sec'y.-Treas.

New York Pest Control Association

The New York Pest Control Association held a membership meeting at the headquarters, 366 Madison Ave., New York City, Tuesday, June 19th. President William O. Buettner presided.

Preliminary discussion included a general report of the chemicals and equipment situation by Bill Buettner and report by Secretary-Treasurer W. J. Parker. Financially the NYPCA is in a healthy state with a working cash in the bank of $4,652.28. In addition the assets include a few accounts payable and ownership of $4,000.00 in U. S. War Bands of Series F which at cost are valued at $2,960.00.

Principal discussion was in connection with the revision of Section 104 of the Sanitary Code. Recommendations were offered in connection with proposed changes and unanimous approvel given to the president to act on behalf of the NYPCA at any and all meetings that are held by the Health Department and leaving it to his discretion to appoint members of the Association to appear with him. At the conference held at the Health Department on June 22nd the association was represented by William O. Buettner, Stefan Rohdie, Sidney Wimmer and Walter Quinn.

There appeared no urgent need for maintaining dues at the present rate and therefore a motion was duly made, seconded and carried that there be submitted to the membership for mail-vote the resolution that would reduce the rate of dues by one-third. Effective date would be upon approval of the resolution.

The annual election of officers will be held at the first fall meeting in September. The Nominating Committee appointed to bring in a slate composed of president, first and second vice-presidents, three directors and secretary-treasurer is composed of Sidney Wimmer, Edward N. Goldey and Jacques Hess.

Among those in attendance were:
Arthur W. O'Connor, Security Ext. Corp.
Maxwell E. Blinder, Josephson Disinfectant Co., Inc.
M. A. Gladstone, Abbot-Madison Corp.
A. L. Brody, Pioneer Ext. Co.
William Farrell, Effective Ext. Co.
Maxwell E. Blinder, Oriental Ext. Corp.
Philip Haller, Virus Limited, Inc.
David Schatzberg, S. & S. Ext. Co.
C. Liberman, Interboro Ext. Co.
Georgia E. Bloch, Broklyn Ext. Co.
Edward N. Goldey, Bliss Ext. Co.
Alice T. Billings, Steamship Sanitation Co., Inc.
Jacques J. Hess, Exterminating Services Corp.
Morris Feldman, Columbia Ext. Co.
William Shrimplin, Rose Ext. Co.
C. Schwimmer, Fumex Sanitation.
P. Carroll, Vermite Ext. Co.
N. N. Sameth, Sameth Ext. Co.
H. Rosenfeld, World-Wide Ext. Co.
Walter A. Quinn, Sameth Ext. Co.
N. Fremed, Sameth Ext. Co.
B. Cantor, Benedict Ext. Co.
M. Silverman, Benedict Ext. Co.
Philip H. Mayer, Evins Ext. Co.
Jack Bennosche, Evins Ext. Co.
David A. Weisburger, B. & D. A. Weisburger.
Sidney Wimmer, Majestic Chem. & Ext. Co.
John Hauff, Zenith Ext. Co.
Herbert Meyer, Fumex Sanitation Co.
Thos. H. Mahon, Asst. Secy., NYPCA.
William O. Buettner, Buettner Pest Control Co.
W. J. Parker, Secy-Treas., NYPCA.

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Eliminate Use of Poison!

Require No Bait!

A practical and economical way to rid buildings of rodent pests! No hazards of poisoned bait . . . or of decomposition! Easy to prepare! Just place WIZO Rat Boards near rat hole or form a runway next to walls. Fasten boards to floor to prevent pulling away. Rodents are caught firmly the moment they step on the boards.

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Keeps Pigeons, Starlings and Other Birds from Buildings

10 lbs. $6.00 25 lbs. $13.50 100 lbs. $45.00

PHOSPHORUS-PASTE

For Rats, Mice and the Large Brown and Black Roaches

10 lbs. $4.25 25 lbs. $9.00 100 lbs. $32.50

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"TOX-EOL" 12½ TO 1 SUPER CONCENTRATE

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This new super strong CONCENTRATE may be diluted with 12½ parts Fuel Oil, Kerosene, or even Crank Case drainings to make the proper strength (over 5%) treating solution.

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Rodent Seed, Ant Jelly, Arsenic, Carbolic, Pyrethrum, Cresylic, Red Squill, Derris Powder, and other effective chemicals that do a thorough job for the Pest Controller. The quality of CERTOX products remains unaffected by the national emergency. Prices, too, are near normal.

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Better than pre-war.

Bulb made of synthetic rubber.

Works better, lasts longer, snappier.

Oil and grease resisting.

Perfect invisible seams.

Nozzle made of heavy die-cast metal with cut threads.

Large opening for quick refilling.

Made to form-fit hand of pest control operator.

In dozen lots or more of a size

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8 Oz.	7.20 doz.
4 Oz.	3.00 doz.

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II. Plants as Housepests. Bacteria. Molds which live in the house. Timber rot, fungus. What plants do to housepests and what housepests do to plants and plant products. Pages: 62.

III. Lower Animals. Protozoa, worms, snails, millepedes, spiders, mites, many others, as far as they are housepests. Pages: 112.

V. Backboned Animals. Chordata, coldblooded and warmblooded. Rodents, rats and mice take 56 pages. Formulae, Index. Pages: 148.

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The New 1945

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By EDITOR-IN-CHIEF, H. BENNETT

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Professor of Entomology and Botany
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Professor of Zoology
SAN JOSE STATE COLLEGE

In this new book the authors give a general view of a vast and fascinating world.

Comparatively brief and nontechnical, the book reviews the many fields upon which the insect impinges, discussing such topics as insect structures, how insects grow up, insect food and feeding habits, insect food-getting devices, how insects reproduce themselves, how insects get air, how insects move, how insects are protected, insect voices, insect fitness, insect orders, social life among the insects, the value of insects, injurious insects and their control, where to look for insects, rearing insects, and how to collect and preserve insects.

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The extermination of vermin is a skilled proceeding requiring the employment of scientific methods and of persons possessing technical knowledge. This authoritative book will prove of definite and practical value for all who are interested in the control of insect pests and in the prevention of disease.

CONTENTS: General Outlines of Insect Control; The Bed-Bug; The Flea; The Louse; Other Insect Pests; Building Construction and Infestation; Gaseous Fumigants; Other Specifics; The Technique of Fumigation; Insect Control and Educational Measures; Legislative Control; Human Toxicology; Disinfestation of Foodstuffs; Disinfestation of Ships; Forms and Records; Index.

Spray Chemicals and Application Equipment

The new book "Spray Chemicals and Application Equipment" is the result of six years research and collection of data by Wayne B. Fisher, B.S.A., Purdue University, chemical sales representative, and commercial horticulturist, cooperating with Dr. J. A. McClintock, Professor of Horticulture, Purdue University (co-author).

The book "Spray Chemicals and Application Equipment" is divided into two parts. Part one gives the interesting historical background of many chemicals and detailed discussions and photographs showing how they are manufactured. In addition, much discussion is devoted to methods of using spray chemicals, to insects and diseases controlled by the specific chemicals, and to methods of improving present day pest control practices.

Part two is a complete discussion describing almost every type of sprayer and duster available to the public for use in applying spray chemicals. About 300 illustrations are included in this section, and all types of equipment is shown ranging from the simplest atomizer sprayer to the largest commercial sprayers and airplane dusting equipment.

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The latest helpful information service literature will be sent to you without cost or obligation. If, in addition, there are any particular pieces of literature offered by advertisers in this issue you are interested in receiving, either write them direct, or if you prefer, please send us such requests.

Please note, however, that you must request each booklet on a separate letterhead though they may all be mailed in one envelope addressed to Pests, 126 Lexington Avenue, New York City, N. Y.

"SKUNKADORA" . . . DEODORANT

Most, if not all, PCOs have at one time or another wrestled with the problem of eliminating the odor of a dead rat wall-trapped. A simple method to eliminate such an odor, it is stated, is to use Skunkadora, application of which is easy. One merely, we are informed, unscrews the cuff of the electrical fixture nearest the spot where the odor is noted. This displays an iron box in which the wires are coiled. An open space between it and the plaster wall is left. By inserting the nozzle of the sprayer in this aperture, the Skunkadora can be forced behind the partitions and through the space where the dead rat lies. Since the spray will sink down and reach the body, as soon as it comes in contact all odor ceases. This action is active as long as any smell of decomposition persists, it is stated.

WRITE PESTS—SPARKILL.

NEW EDITION FUMIGATION MANUAL NOW AVAILABLE

The new edition of the Fumigation Manual pertaining to the use of Aero Brand HCN Discoids is now off the press. Every PCO should have one on hand as it is a ready reference and contains helpful and valuable information and suggestions.

WRITE PESTS—A-C MANUAL.

ODORLESS DEODORANT—This all-purpose home and commercial deodorant, it is stated, kills odors by absorption, not by superimposing another odor. It is also stated to be non-toxic, non-poisonous, non-caustic, non-inflammable, non-corrosive and harmless to man, animals and birds. Effective in the elimination of offensive odors.

WRITE PESTS—X-ODOR.

RAT GLUE AND BOARDS CIRCULAR

RAT GLUE AND BOARDS CIRCULAR discusses use of rat glue boards as a means for effective rat control, etc.

WRITE PESTS—ELKAY.

INSECT TRAPS

Bulletins describe traps for ants and roaches, with suggestions for their use.

WRITE PESTS—SOILICIDE.

TERRATOX CONCENTRATES

Circular depicts damage by termites, Lyctus Beetles and decay and the value of Terratox Concentrates as a means of control. Price list also included.

WRITE PESTS—TERRATOX (W).

FUMIGATORS EXAMINATION

Analysis of examination papers from a written examination taken by a number of PCO's and others who attended a school on insect and rodent control are contained in this news bulletin. Bulletin also publishes a list of questions people ask PCO's about Cyanogas and the answers thereto.

WRITE PESTS—A-C91.

THE MODERN TREATMENT OF CYANIDE POISONING

This brochure, written by KK. Chen, M. D., Charles L. Rose, B.A., and G. H. A. Clowes, Sc.D., and reprinted from the Journal of the Indiana State Medical Association, discusses The Modern Treatment of Cyanide Poisoning. Contents include: Sources of Poisoning and Mortality Statistics; Diagnosis; The New Treatment; A Suggested Procedure for Actual Treatment; Results to Date, etc.

WRITE PESTS—A-C CYANIDE.

PYRETHRUM - DERRIS - RED SQUILL PRODUCTS

Leaflet describes foregoing insecticides with special bait chart for use in connection with powdered red squill.

WRITE PESTS—PRENTISS.

CONTROL OF TERMITES-POWDER-POST (LYCTUS) BEETLES-DECAY

Circular discusses properties and uses of Permatox A in termite control and its application to soil and wood to control termites, decay control, powder-post beetle prevention and control. Description of Parmatox T and its uses in termite control, as a soil poison, are also discussed, together with toxicity.

WRITE PESTS—BULLETIN 43-T.

VICTOR GLADIATOR METAL RAT TRAP

The Victor Gladiator Rat Trap is made of 22 Gauge Steel, Gun Metal finish. Equipped with strong double-coil spring made of 15 gauge oil tempered spring wire. heavy wire work throughout. Note holes in base for nailing to floor, rafters, or wall.

The Victor Gladiator has been designed especially for professional use by public health officers, sanitary officers of the armed forces, and pest control operators. It is of rugged construction and is particularly adapted to outdoor use; especially recommended for the tropics and on shipboard, not readily affected by continuous contact with moisture.

Actual size 7⅛x3⅝x1½". Weight, packed 1 dozen, 4½ lbs. Weight, packed 6 dozen, 29½ lbs.

WRITE PESTS—VICTOR.

PRESERVATION OF MILLWORK AND OTHER DRY WOOD PRODUCTS

Bulletin discusses composition of Permatox II Concentrate and its application in the preservation of millwork and other dry wood products.

WRITE PESTS—PERMATOX 43-B.

RATS CAN'T RESIST THE NEW BAIT

VEGEX
DRY
GRAVY
as effective
as the best beef

Simply add water—boil up once—add poison—and it works like magic. Keeps indefinitely—needs no refrigeration. Safe to use.

One five-pound package makes five-gallon mixture—costs only four dollars. Four five-pound packages—fifteen dollars. Available in five-pound packages only.

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Inquiries invited from pest control operators interested in New Big 6 Line of Wizo Moth Killer Vaporizers and Crystals. Catalog describing each product fully and prices available.
WRITE PESTS—ELKAY.

FILM OF VALUE TO PCO

Circular describes a vivid action film of greatest value to every PCO and opportunities it affords PCO to build good will and better public relations.
WRITE PESTS—WIL-KIL.

ANT BAIT

Circular describes a jelly ant bait with Thallium Sulphate as its toxic ingredient. Comes packed in sizes convenient for resale or professional use. Sample tube on request.
WRITE PESTS—LETHELIN.

Phosphorous Paste killing power; baits, combinations, amounts for the control of roaches, mice, rats are discussed.
WRITE PESTS—OPITZ.

FUMIGATION SAFETY RULE

A review of fumigation accidents of record for 1943 shows that oversight or disregard of rule to lock all doors and accessible windows, failure to place warning signs thereon and failure to post guard during fumigation account for approximately 20% of the accidents. Bulletin discusses ways and means to eliminate accidents of this nature.
WRITE PESTS—AC No. 80.

Fortified Red Squill circular, which includes bait chart, describes a Fortified Red Squill powder activated and standardized to meet recommendations of the Fish & Wildlife Service for a minimum lethal dose of 500/600 mg/kg of rat.
WRITE PESTS—PRENTISS.

SODIUM SILICO FLUORIDE

Bulletin describes sodium silico fluoride product with proper density. Effective manner of testing for presence of HCN after ventilation also discussed.
WRITE PESTS—AC 70.

Fumigation manual. 76-page manual describes safe handling and working with "Cyanegg" and on fumigation procedure and insect control. Illustrated.
WRITE PESTS—DuPONT.

GAS MASKS—RAT CONTROL PROGRAMS

Bulletin offers some pertinent suggestions regarding gas masks and how to keep them in perfect condition. It also discusses rat control programs and what the PCO can do to further them.
WRITE PESTS—AC 82.

NEW ANT TRAP

Manufacturer claims many new features such as no turning or twisting necessary; four openings; larger trap; contents ½ greater than any other competitive brand.
WRITE FOR YOUR FREE SAMPLE OF ANT TRAP TO NOTT, c/o PESTS.

Red Squill Rat and Mouse Killer

Booklet describes Red Squill rat and mouse killer made up in convenient package form for resale to public. Also illustrated are resale packages of dog repellent, moth killer, etc. Included in the booklet is reprint of an article on Red Squill by Leonard R. Parkinson, Agr. Exp. Station, Massachusetts State College. WRITE PESTS—OHIO.

CALCIUM CYANIDE FOR RAT CONTROL

36-page booklet contains excerpts from official publications and reports of health officers throughout the world regarding use of calcium cyanide in the control of rats. The widely differing conditions surrounding infestations, and the specific types of control for each, which are described, will serve as suggestions to health officers and others in solving similar problems. WRITE PESTS.

THE ACTIVATING EFECT OF PYRETHRUM UPON THE GERMAN COCKROACH

Research material prepared by John M. Hutzel, of the Ohio State University, Columbus, Ohio in cooperation with the Kenya Pyrethrum Extension Service, Inc., N. Y. Supervised by Professor F. L. Campbell.
WRITE PESTS—PYRETHRUM.

INSECT POISONING AGENTS

"Thanite, quick death to insects" is a 12-page booklet presented in Basic English with a view to international use. It discusses the development and applications of the product.
WRITE PESTS—HERCULES.

ELECTRIC FANS HAVE SEVERAL USEFUL FUNCTIONS IN FUMIGATION WORK

Ways in which fans may be used to promote circulation and penetration of gas during fumigation are described in this bulletin. WRITE PESTS—AC 84.

BIRD REPELLENT

Circular describes product which manufacturer claims will serve as an effective repellent against pigeons, starlings, bats, dogs, cats, rats, mice, woodchucks, moles as well as crawling and flying insects that prey upon plantings and seedlings.
WRITE PESTS—PX.

BOX CAR FUMIGATION

Folder describes box car fumigation with methyl bromide, giving details as to: car seal, applicator arrangement, methyl bromide application, dosage, exposure period, temperature, aeration, precautions.
WRITE PESTS—DOW.

PRESERVATION OF LUMBER, POLES, POSTS, PLYWOOD WITH PENTACHLORPHENOL

This bulletin gives a brief summary of the properties, use to date, and recommendations for the preservative treatment of lumber, poles, posts, and other forest products with Permatox A. This product, it is stated, has shown outstanding promise as an effective and permanent oil preservative for many wood products. Set forth briefly also, are recommendations for the effective preservative treatment of lumber, poles, posts, and other forest products with Permatox A, based upon experience to date.
WRITE PESTS—BULLETIN 43-A.

METHYL BROMIDE APPLICATORS AND SUPPLEMENTARY EQUIPMENT

Profusely illustrated this booklet describes applicators for one-pound cans of methyl bromide; applicators for use with cylinders; application of methyl bromide by direct weighing of cylinders; tubing and piping; piping system for mill and warehouse; sealing materials; fans; tarpaulins; safety equipment; Halide Leak Detector; safety suggestions, etc.
WRITE PESTS—APPLICATORS.

WOOD PRESERVATIVES

Discussed are several products for the control of decay, blue stain, termites, powder post beetles, swelling, warping, checking, shrinking, moisture absorption, grain raising. Illustrated.
WRITE PESTS—PRESERVATIVES (W).

PIGEON-PROOFING

Folder describes pigeon-proofing invention which manufacturer claims will completely and decisively eliminate the pigeon nuisance. In use by real estate companies, churches, government buildings, etc.
WRITE PESTS—STANLEY.

FIRST AID AND TREATMENT FOR METHYL BROMIDE EXPOSURE

This valuable booklet, prepared by Dr. H. H. Gay, Medical Director, The Dow Chemical Company, Midland, Mich., outlines first aid and treatment for Methyl Bromide exposures. Contents are based upon what is believed to be sound medical practice. Digest follows: properties of Methyl Bromide, symptoms of Methyl Bromide exposure, first aid, suggested treatment by a physician, skin contacts with Methyl Bromide. Copy may be had by writing Dow direct, or
WRITE PESTS—GAY.

SAFETY IN FUMIGATION WORK

Fumigation Safety Rule No. 1; namely, "Vacate entire building even though only part is fumigated, as well as adjoining buildings into which gas may penetrate" is discussed in this bulletin.
WRITE PESTS—AC No. 78.

ALL-PLASTIC GOGGLE

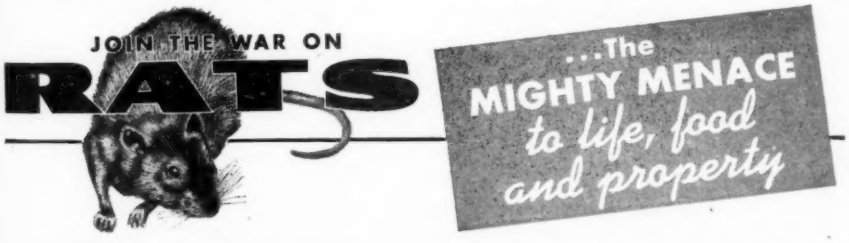
Circular describes a new lightweight, all-plastic goggle which provides comfortable, durable protection for the eyes. The individual eye cups are moulded to fit the facial contours, giving a close yet comfortable seal around eye orbits, according to the circular. Particularly useful for spraying in termite control, as well as heavier bedbug spraying operations, to prevent direct sprays from getting into the eyes themselves—available in different models.
WRITE PESTS—MINE.

FUMIGATION AND PLASTICS

News release discusses use co-ordination of such diverse chemical products as plastics and fumigants in connection with infested bagged grain, seed, packaged or boxed foodstuffs. Methyl bromide-plastic-tarpaulin method of disinfestation described.
WRITE PESTS—DOW.

RESPONSE OF RATS MAINTAINED ON DIETS FUMIGATED WITH METHYL BROMIDE

Research material reprinted from Food Research
WRITE PESTS—DOW-RESEARCH.



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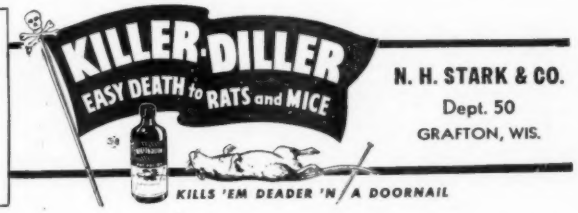

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RATES — For individuals seeking employment, 5c per word, minimum $1.00. All others 10c per word, minimum, $2.00. All advertisements must be in the hands of the publishers seven days before publication date and must be accompanied by cash or money order for payment in full. The publishers are not responsible for any false or misleading advertisements.

Replies to advertisements where box number only is indicated should be addressed c/o PESTS, 1200 Oak St., Kansas City 6, Mo., giving box number as well.

ONE MAN PEST CONTROL BUSINESS, Best city in Rocky Mountain area; mild climate; yearly contracts—$3250.00. Can work in one week each month. Fumigations and spots ran $4000.00 last year. Will sell for $3,500.00 Cash and teach the route until well known. Write Box 14, c/o Pests.

FUMIGATION SAFETY RULE

Bulletin discusses importance of personal inspection of entire premises immediately before releasing gas, and offers some constructive suggestions with respect thereto.

WRITE PESTS—AC 81.

STERILIZING GAS MASKS

News bulletin describes a chemical that is claimed by the manufacturer to be effective in sterilization of gas masks. Bulletin also discusses antidotes and first aid, particularly an inhalant which functions best as an antidote to HCN poisoning, and where obtainable.

WRITE PESTS—AC-73.

FUMIGATION SAFETY SUGGESTIONS

Of timely interest, in view of the at-hand fumigation season, is this bulletin which advocates as a safety measure the use of methyl orange-mercuric chloride test papers for the presence of HCN. It also discusses can openers for Zyklon Discoids, the need for adequate ventilation after fumigations, and gives a cautionary note on pilot lights in premises to be fumigated.

WRITE PESTS—AMERICAN.

TERMITE CONTROL

Folder discusses concentrates available for two distinct methods of termite control: (1) treatment of timbers in place with an oil solution, and (2) treatment of all soil around an infested building or area with either an oil or water soluble chemical. Issuing company states it specializes in all problems concerning wood-destroying organisms and also wood preservation and invites your inquiries thereto.

WRITE PESTS—WOOD.

MILITARY FUMIGATION MANUAL

This special 48-page manual has been prepared for the benefit of officers and civilians in the Armed Forces who are responsible for vermin control, and for PCOs who may contract with the Armed Forces for fumigating work. Among other subjects, the manual discusses: dosage, preparation of building for fumigation, fumigation operation, common pests, cockroach control; precautions, first aid methods, etc.

WRITE PESTS—AC.

SYNTHETIC ROACH POWDERS

Research material apropos thiocyanates in powdered form for roach control in place of pyrethrum—describes the development and properties of roach, ant and bedbug powder based on Lethane A-70.

WRITE PESTS—SYNTHETIC.

SPECIAL ROACH POWDER

Circular describes a roach powder (containing Lethane A 70) which, it is stated, is fast acting, positive in kill and will not deteriorate for at least eight weeks after application. As a result, the supplier points out, the PCO does not have to service his customers as often, thereby conserving manpower. Moreover, it is stated, the powder is non-toxic to warm-blooded animals and may, therefore, be used in dairies, packing and food handling plants, homes, etc., in fact, in all places where sodium fluoride mixtures may not be used. . . . Described also is a sodium fluoride-Pyrane formulation for the PCO who wishes to make his own roach powder.

WRITE PESTS—BOSLEY.

LETHANE A-70

Folder discusses roach, ant and bedbug powders based on this new insecticide concentrate. Described are: safety factors, cost per application, killing power, performance data, residual activity, tenacity, etc.

WRITE PESTS—A-70.

SOLVAY PRODUCTS

48-page booklet in colors and illustrated, covering their entire line of Alkalies and Special Products, with a special section dealing with Para-Dichlorobenzene and Ortho-Dichlorobenzene.

FREE COPY MAY BE HAD BY PEST CONTROL OPERATORS.

WRITE PESTS—SOLVAY, c/o PESTS.

NEW RAT BAIT

The current difficulty of procuring rat baits because of meat rationing has been overcome by the discovery on the part of numerous PCO's of Vegex Dry Gravy, states its manufacturer.

This product with a delicious meat flavor, and high in hydrolized vegetable protein seems to be an irresistible lure for rats, according to the same source.

It has many advantages. It is instantly prepared by simply adding water and boiling up once.

The prepared bait can be handily carried in the kit, and the bait need never be touched, as bread can be dipped in the poison mixture by tongs. Keeps indefinitely and needs no refrigeration, it is stated.

Results with Vegex Dry Gravy have been so good in rodenticide work, and the Gravy is so inexpensive and easily handled that PCO's who have used it are expecting, according to the supplier, to continue even after war rationing is a thing of the past.

The Vegex Company, located at 175 Fifth Avenue, New York 10, N. Y., puts up this Dry Gravy in 5-pound packages only. One 5-pound package makes 5 gallons of finished Gravy. Prices and other pertinent data on Vegex Rat Bait may be had by writing the company.

DEODORANT

Catalog includes price data, etc., on deodorant which it is felt can neutralize and deodorize such toxic agents as Thanite, Lethane 384 Special, Velsicol, etc. Also contains data on perfume oils for sprays made with pyrethrum and kerosene.

WRITE PESTS—MAGNUS.

METHYL BROMIDE

What it is; what it does; how to use it—all these questions apropos methyl bromide are covered in an instructive and informative brochure. Described are dosage schedule for various type pests, methods of application and preliminary precautionary measures.

WRITE PESTS—Westvaco.

ALABAMA OPERATES STATE-WIDE RAT CONTROL PROGRAM TO STOP SPREAD OF TYPHUS FEVER

An article written by Dr. Andrew J. Perolio, State Director of Typhus Control of the State of Alabama which describes the State's program for stopping the spread of typhus fever.

WRITE PESTS—AC.

Hydrocyanic Acid Poisoning—Skin Absorption

Bulletin discusses some pertinent safety suggestions with respect to avoidance of hydrocyanic acid poisoning through skin absorption.

WRITE PESTS—A-C-74.

CONTINUOUS INTIMATE BLENDING

A bulletin on the intimate blending of fine chemical, food and insecticide powders has recently been issued by Sprout, Waldron & Company, Manufacturing Engineers. In addition to a description of Blending Systems designed for continuous, automatic operation, there is a page of photographs which show the difference between intimate blending and conventional mixing as revealed by typical spatula tests. Copies of this 8-page bulletin in two colors may be obtained from PESTS—SPROUT.

REMOVAL OF PHOTOGRAPHIC FILMS AND PAPERS BEFORE FUMIGATION

is the title of an interesting and informative Bulletin which discusses the effects of hydrocyanic acid vapors upon unexposed photographic film. Other subjects discussed are: "High Temperature Necessary for Winter Fumigation"; "The Rat Menace—An Opportunity to Cooperate."

WRITE PESTS—A-C-88.

INSECT COLLECTIONS

Booklet describes pocket display case which may slip easily into a coat pocket making it of value for salesmen or others who travel about. Life history collections of structural type pests are also available for the PCO.

WRITE PESTS—WARD'S.

EFFECT OF HYDROCYANIC ACID ON FOODSTUFFS

This bulletin answers some highly interesting questions as to the effect of HCN on footstuffs.

WRITE PESTS—A-C 89.

THALLIUM PRODUCTS

Circular calls attention to ant traps and jelly bait for control of ants—house or garden; mice seeds, rat paste, etc.

WRITE PESTS—NOTT.

RESPIRATOR

Bulletin discusses "Clear-Vue" model Dustfoe Respirator, which it is stated is durable, odorless, noncorrosive and a non-conductor of electricity and heat and gives a proved protection against toxic dusts.

WRITE PESTS—DUSTFOE.

HYDROCYANIC GAS MASK

Bulletin describes Hydrocyanic gas mask with all-vision facepiece.

WRITE PESTS—MINE.

NEW PERFUMING PRINCIPLE FOR INSECT SPRAY TOXIC AGENTS

Perfume Oil Fruit Berry MM&R is called the first new and different neutralizer-perfume in a decade, by Magnus, Mabee & Reynard, Inc., New York essential oil house.

Perfume Oil Fruit Berry MM&R not only neutralizes the odor of toxic agents, but imparts a truly refreshing fragrance of uncommonly light character. It has a definite fruity scent. A remarkable feature is that it has so light a fragrance, yet has the hiding power to give lasting coverage of heavy odors. This feature will be of particular interest for sprays used in food plants, bakeries, etc.

Fragrance of sprays, up to now one of the unmentionables of insect toxicants, now becomes an asset instead of a liability. Samples may be had by writing PESTS—MABEE.

DDT IS POISONOUS

An article by Herbert O. Calvery, Food and Drug Administration, which discusses tolerance level deemed necessary when it is used on human food.

WRITE PEST—POWELL (C).

NEW RECHARGEABLE FLASHLIGHT BATTERY

Forty per cent greater capacity and higher sustained bright light is claimed for a new, improved model Rechargeable Flashlight Battery announced by the IDEAL Commutator Dresser Co.

The present Battery is the result of several years of intensive research stimulated by the success already obtained from previous models now in service.

Originally introduced five years ago, this type of Battery has played an important part during the war which caused a scarcity of dry cells.

The IDEAL Battery, it is stated, may be charged from any AC Electrical outlet by means of a rectifier type charger or from the DC ignition system of automobile, truck or bus.

Where flashlights are used regularly, the rechargeable feature of the Storage Battery is said to provide greater economy and brighter, sustained light.

WRITE PESTS—IDEAL.

MOTH DAMAGE PREVENTIVE

Leaflet discusses value of para-dichlorobenzene in moth control, directions in using, and its value as a deodorant. WRITE PESTS—SOLVAY (M).

EDUCATE THE DOCTOR IN FUMIGATION FIRST AID PROCEDURE

Is the title of this instructive Fumigation News Bulletin, which lists some constructive ways in which the PCO can help the doctor to prevent fumigation fatalities. Also discussed are: Fumigation Chamber, Fumigation Prospects, Wholesale Grocers.

WRITE PESTS—A-C 92.

RED SQUILL FOR RAT CONTROL

An informative brochure on the value of red squill in control of rats, mice; its effect on domestic animals and man.

Also discussed are bait procedure, pre-baiting, and use of red squill in extended rat programs, attractants, research in rat-food selection, etc.

WRITE PESTS—PENICK.

ELECTRIC FANS

Bulletin discusses value of electric fans in connection with fumigation work, also some pertinent thoughts on the Schafer Prone Pressure Method of Resuscitation, etc.

WRITE PESTS—AC-69.

Advantage of low dosage fumigation at frequent intervals—warehouses and factories—is discussed in this bulletin. Inadvisability of fumigating cold houses also reviewed.

WRITE PESTS—AC-90.

ANIMAL ODORS AS REPELLENTS AND ATTRACTANTS

Incorporation of the glandular extraction of the skunk into commercial repellents to add to their potency and efficacy is discussed in an interesting article, entitled "The Odor of an Enemy, the Cat, Frightens Mice Away," by Charles V. Sparhawk. In it he also discusses the use of a small quantity of a muskrat bait in the form of a gland as a powerful attraction to any creature that feeds on meat, such as mosquitoes, flies, ticks, lice, rats and mice, etc.

WRITE PESTS—SPARHAWK.

NH DUST

Leaflet describes new organic insecticide compound which, it is stated, may be used where non-poisonous insecticides are mandatory. Effective against roaches, silverfish, ants, fleas, lice and many other common pests found in the home, industrial and food storage plants.

WRITE PESTS—POWELL.

FUMIGATION SAFETY RULES

Bulletin discusses fumigation safety rules with respect to mattresses, pillows, bedding, clothing and bedroom rugs, etc.

WRITE PESTS—AC No. 79.

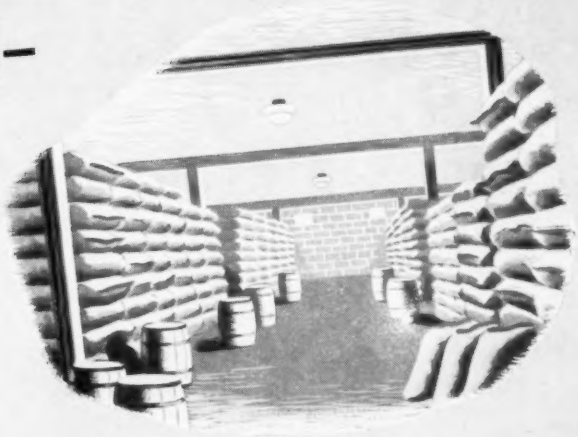
Case History*

FUMIGATION OF CRUDE DRUGS

Other Fumigants Failed—

Methyl Bromide

Did the Job



*Actual record is on file at The Dow Chemical Company

Over one thousand different crude drugs, stock remedies, and chemicals stored in a midwestern town were infested with a number of species of insects. American cockroaches, confused flour beetle, spiders, and various other stored commodity insects—as well as mice—weren't bothered by common control measures. Then, Dow Meythl Bromide was tried. Here is the resulting success story:

Building: **Brick. Steel sash windows. 300,000 cubic feet.**

Preparation: **Windows sealed with masking tape. Doors made gas tight with water-soaked kraft paper.**

Dosage and Exposure Period: **Slightly more than one pound of Dow Methyl Bromide per thousand cubic feet exposed at temperature average of 65° F. for 23 hours.**

Method of Application: **Methyl Bromide released from cylinders and circulated by seven fans running for one hour.**

Aeration Period: **Two hours with fans operating.**

Results: **No signs of life. Insects (in test boxes which had been spotted where depth of penetration could be checked) were found dead.**

The drug firm's management expressed pleasure at the ease of handling Methyl Bromide, lack of clean-up work except for removing seals and cylinders, rapid aeration, and remarkable thoroughness of its penetration and killing power. Write for details on other tough fumigation jobs in which Methyl Bromide can help you.

THE DOW CHEMICAL COMPANY, MIDLAND, MICHIGAN

New York • Boston • Philadelphia • Washington • Cleveland • Detroit • Chicago • St. Louis
Houston • San Francisco • Los Angeles • Seattle

The penetrating fumigant

Methyl Bromide

DOW

CHEMICALS INDISPENSABLE TO INDUSTRY AND VICTORY

PLAN TO REPEL THAT SPRING INVASION NOW!

An invading army is converging on all objectives. The attack may be expected at any moment. All resources for defense must be massed against the enemy. Plans must be made AT ONCE to repel this certain invasion.

Check your stocks of HI-TOX, MORTICIDE, SUPER-MORTICIDE, MORTOLIN, ASSCO ROACH POWDER and POWDERED FORTIFIED RED SQUILLS. You will avoid disappointment and consequent operational loss by ordering your SPRING requirements NOW!—You should have at least a sixty day supply of all our products on hand at all times to protect yourself against transportation delays.

If you are still unacquainted with our products, write our office nearest you for samples and data.

Associated Chemists, Inc.

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